AN OPEN COMPARATIVE CLINICAL STUDY ON "THANDAGA VATHAM (LUMBAR SPONDYLOSIS)" WITH THE EVALUATION OF TRIAL DRUGS NAGA CHENDHURAM"(INT) "MOOLAYOGA NIRKUNDI THAILAM" (EXT) AND "VARMAM THERAPY".

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DECLARATION BY THE CANDIDATE

I hereby declare that this dissertation entitled **An open comparative clinical study on "Thandaga Vatham (Lumbar Spondylosis)" with the evaluation of trial drugs "Naga Chendhuram" (Int) "Moolayoga Nirkundi Thailam" (Ext) and "Varmam Therapy"** is a bonafide and genuine research work carried out by me under the guidance of **Dr. M. MOHAMED MUSTHAFA, M.D (S),** Post Graduate Department of **Sirappu Maruthuvam**, Govt. Siddha Medical College, Arumbakkam, Chennai- 600106 and the dissertation has not formed the basis for the award of any Degree, Diploma, Fellowship or other similar title.

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ENDORSEMENT BY THE HOD, PRINCIPAL/HEAD OF THE INSTITUTION

This is to certify that the dissertation entitled **An open comparative clinical study on "Thandaga Vatham (Lumbar Spondylosis)" with the evaluation of trial drug "Naga Chendhuram" (Int) "Moolayoga Nirkundi Thailam" (Ext) and "Varmam Therapy"** is a bonafide work carried out by **C R SREEDHANA** during the year 2014-2017 under the guidance of **Dr.M.MOHAMED MUSTHAFA, M.D (S),** Post Graduate Department of Sirappu Maruthuvam, Govt. Siddha Medical College, Chennai - 600 106.

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CONTENTS

1. INTRODUTION

Siddha system of Medicine is the citadel of medical system. It is used not only to cure but also to prevent disease and in turn to increase the lifespan of human beings. The word Siddha not only denote simplicity, uniqueness, ancient nobility, truth and purity but includes all these sense and stands a unique lofty entity. It was propound by lord Siva as a scientific and spiritual benevolence to his disciples. The system was woven into discipline of reputation by symphony of eighteen siddhars.

Siddhars have all along been considered to be a mystical and mysterious sect and a complex phenomenon in the history. Siddhars were of the concept that a healthy soul can only be developed through a healthy body. So they developed methods and medication , that are believed to strengthen their physical body and thereby their souls. The aforesaid eighteen siddhars practiced various arts in Siddha medicine again this had resulted in alchemy meant for the preparation of acting potent high tech medicine for the treatment of incurable disease.

Varma medicine is the unique pride of Siddha medical System. Varmam is a energy point that functions in the body. Diseases can be treated using Varma. Varma is a specialized field of Siddha pertained to cure neurological weakness, neuromuscular problems Its is height efficacy, instant and quick relief, low adverse effect.

Siddhi refer to a yogic state .Siddhars are said to be the yogis having lived a complete life,

"Mulamathai arinthakal yogamachu muraimaiyudan

Kandakkal vadhamachu

Salamudan kandavaranum vasamay niruppar

Sathirathai sutterithal avane Siddhan[1]"

-Saint Agathiyar

In Siddha system of medicine the total number of diseases are classified to be 4448 types. But the sub classification methodology and enumeration differ from one source to another. However, the classification of the majority of these diseases is either based on clinical symptoms or vitiation of humor. Further they have been sub-classified on the basis of Mukkutram and the predominant symptoms, affected organs and etiological factors. As per Yugi text, the sings and symptoms of Thandagavatham may be correlated with Lumbar Spondylosis in modern science.

Lumbar spondylosis is an age related degenerative condition affecting the lower region of spine. In patients with lumbar spondylosis, the spine will be compressed and the space between the vertebrae will be narrowed. Symptoms vary from Low back Pain, radiating pain, numbness, muscle weakness etc depending on the severity of the disease

In clinical practice considerable number of cases of Thandagavatham are Reported daily. Hence selected the disease Thandagavatham (Lymbar Spondylosis) for my clinical study with Naga Chenduram (Internal Medicine) mentioned in Aathma Ratchamirutham Sindhu which is indicated for Vatha diseases, Moolayoga Nirkundi Thylam (External medicine) mentioned in Theraiyar Thailavarkam which is also indicated for Vatha diseases and **V**armam theraphy for thandaga vatham.

2. AIMS AND OBJECTIVES

2.1 AIM:

To compare the therapeutic efficacy of Siddha herbo mineral trial drug Naga Chendhuram (Internal Medicine) Moolayoga Nirkundi Thailam (External Medicine) and Varmam Therapy (External Therapy) derived from classical Siddha literature and Its synergistic effects in Management of "Thandaga Vatham" (Lumbar Spondylosis).

2.2 OBJECTIVES:

1. PRIMARY OBJECTIVES:

To evaluate the therapeutic efficacy of **"NAGA CHENDHURAM" (INT) "MOOLAYOGA NIRKUNDI THAILAM" (EXT) and "VARMAM THERAPY"** on "**THANDAGA VATHAM" (Lumbar Spondylosis).**

2. SECONDARY OBJECTIVES:

- To collect the authorial measures and literature reveiws of Thandagavatham in ancient Siddha and Modern Literatures.
- To evaluate the Safety of the trial drug **NAGA CHENDURAM (Internal)**.
- To standardize the preparation of selected trail drug.
- To use modern parameters to conform the diagnosis of the disease.
- To discuss the various literature evidences for clinical features of Thandaga Vatham in Siddha medicine and Lumbar Spondylosis in modern science.
- To explore the traditional preparation with scientific evaluation of trail drug.
- To study the effect of Varmam in Thandagavatham patients.

3. REVIEW OF LITERATURES

3.1 SIDDHA LITERATURE REVIEW:

Siddha system surmise that the human body is composed of 96 thathuvam and 72000 blood vessles and nerves beyond these, there are 10 naadi, 10 vaayu, and 14 vegangal. All of them play vital roles in various functions of the body. That 10 Naadi further divided into 3 humors i.e Vatham, Pitham, Kabam and these are also called as Uyir Thathu which is most important for the formation and maintenance of the body. These humors remain in the balanced state in normal healthy person and disturbance in their equilibrium leads to ill health.

‘‘நோய்நாடி நோய்முத னாடி யதுதணிக்கும்

வாய்நாடி வாய்ப்பச் செயல்[2]’’

So for 4448 diseases are classified by Agasthiyar Rathina Surukkam Naadi, and in this Vatha diseases are classified as 84 types. According to Yugimuni Vadha disease are 80 in numbers. Vadha disease are otherwise called as Valli Noi.

As per the siddhar Theraiyar’s concept normal complexion or the shine of the skin is altered due to derangement in Vatham humour or Vali humour.

‘‘வாதமலாது மேனிகெடாது[2]’’

3.1.1VATHAM:

Vaatham is Formed by Aakasam[2] and Vayu, controls the nervous action that constitute movement, activity, sensation, etc. Vatham predominates in the bone. It is responsible for the production implementation of thoughts to action. Generally, its function is more related to cerebral activities like, thinking and action.

Vatham predominates in first one third of life when activity, growth ,sharpness of function of sense, are greater

However Vadham represents Vayu, Mind, Dryness, Pain, Flatulence, Sensitive, Lightness

வாதத்தின் இருப்பிடம்

"நாமென்ற வாதத்துக் கிருப்பிடமே கேளாய்

நாடிக்குக் கீழென்று நவிலலாகும்[3]"

VATHAM GENERALLY LIVES IN:

வளிமுதலா யெண்ணியமுக் குற்ற மெல்லாம்

வாழ்வதெனும் தேகமுற்றும் பம்பிப் பரந்து

தெளிவுறச் சாற்றும்நாபிக் குக்கீழ் வாதம்

தீயின்கூ றாமழலோ உந்தி யாவிக்[4]

(மருத்துவத் தனிப் பாடல்)

The seat of Vadham is below the naval

1. Hip region
2. Bones
3. Joints
4. Nerves
5. Muscles
6. Skin
7. Hair follicles
8. Abanan
9. Edakalai
10. Below the umbilicus
11. Stools

QUALITIES OF VATHAM:

“வளியின் பண்பு நெகிழ்ச்சி பரவல்

வறட்சி விரைதல் தட்பம் நுட்பம்

அளிக்கும்பித்தத் தமைந்த குணங்கள்

அனற்றல் நொய்மை நீர்மை-நெய்மை”[4]

Own qualities are 6 in numbers

1. Dry
2. Cold
3. Subtle
4. Rough
5. Unstable
6. Light

NATURAL PROPERTIES OF VATHAM:

- Giving briskness
- Respiration
- Functioning the mind, thoughts and body
- Regulation of fourteen physiological reflexes
- Uniform functioning of the seven elements
- Strengthening the five sensory organs

FUNCTION OF VADHAM:

- Improves the sensory organs
- Improves speech
- Stabilizes the mind
- Given more enthusiasm
- Control respiration
- Pass out 14 naturals

KINDS OF VATHAM:

"முறைமையாம் பிராணனோடபானன் வியானன்

மூர்க்கமா முதானனொடு சமான னாகன்

திறமையாங் கூர்மனோடு கிருக ரன்றான்

தேவதத்த னொடுதனஞ்சயனு மாகும்[3]"

(யூகி வைத்திய சிந்தாமணி 800)

10 DIFFERENT KINDS OF VATHAM:

Even though the vatham seems to be the same, it has got ten different forms and actions. The five important forms of Vaatham among ten.

VATHAM		COLOUR	GOD
Praanan (Uyirkal)	Air of life	Blue	Moon
Abaanan	downward motion (Flatus Air)	Green	Varadharajar
Vyaanan (Paravukal)	spreads throughout	Milky white	Eman
Udhaanan (Melnokkukkal)	upward motion	Ligthening	Fire
Samaanan (Nadukkal)	upward and downward motion	Topaz	Sun
Naagam	higher intellectual function	Gold	Ananthan
Koorman	yawning		Vishnu
Kirukaran	Salivation	Black	Shiva
Devathatthan	Laziness	Crystal	Devendran
Dhananjayan	That acts on death	Blue	Dhanwantari

Praanan

Praanaa, literally the "forward moving air," moves inward and governs reception of all types from the eating of food, drinking of water, and inhalation of air, to the reception of sensory impressions and mental experiences. It is propulsive in nature, setting things in motion and guiding them. It provides the basic energy that drives us in life.

Apanan

Apanan, literally the ''air that moves away'' moves downward and outward and governs all forms of elimination and reproduction . It govers the elimination of the stool and the urine, the expelling of semen, menstrual fluid and the fetus and on deep level it rules the elimination of negative sensory, emotional and mentam experiences. It is the basis of our immune function on all levels

Udanan

Udanan, literally the "upward moving air," moves upward and qualitative or transformative movements of the life-energy. It governs growth of the body, the ability to stand, speech, effort, enthusiasm and will. It is our main positive energy in life through which we can develop our different bodies and evolve in consciousness.

Samanan

Samanan, literally the "balancing air," moves from the periphery to the center, through a churning and discerning action. It aids in digestion on all levels. It works in the gastrointestinal tract to digest food, in the lungs to digest air or absorb oxygen, and in the mind to homogenize and digest experience, whether sensory, emotional or mental. In doing so it assists all the other Pranas in their work.

Vyanan

Vyanan, literally the "outward moving air," moves from the centre to the periphery. It governs circulation on all levels. It moves the food, water and oxygen throughout the body, and keeps our emotions and thoughts circulating in the mind, imparting movement and providing strength

3.1.2 VADHA NOI: (5)

DEFINITION: (IYAL)

Vadha is the principle of motion in the body and mind. When Vadham is healthy, the movement of the body are graceful, unimpeded and yet controlled. When out of balance the movements become erratic, excessive, decreased, or blocked and manifest the clinical symptoms of pricking pain, stabbing pain, and severe pain and at lost, paralysis may occur

Symptoms manifested due to raise of Vadham and cause Vadha disease. In vadha diseases, the one and more symptoms can be seen.

1. Having Astringest taste in the mouth
2. Thirst
3. Dryness
4. Constipation
5. Blackish discoloration of skin, eyes and faces
6. Numbness
7. Pain
8. Rigidity
9. Lack of movements
10. Internal bone pain
11. Inflammation of joints
12. Paralysis of limbs

AETIOLOGY OF VATHA DISEASES:

According to Yugi Vaithya Chinthamani

"என்னவே வாதந்தா னெண்ப தாகும்
மிகுத்திலே மனிதர்களுக் கெய்து மாறு
பின்னவே பொந்தனையே சோரஞ் செய்து
பெரியோர்கள் பிராமணரைத் தூஷ் ணித்தும்
வன்னவே வச்சொத்திற் சோரஞ் செய்து

மாதாபிதா குருவை மறந்து பேர்க்கும்
கன்னவே வேதத்தை நிந்தைசெய்த பேர்க்குங்
காயத்திற் கலந்திடுமே வாதந் தானே”
"தானென்ற கசப்போடு துவர்ப்பு ரைப்பு
சாதகமாய் மிஞ்சுகினுஞ் சமைத்த வன்னம்
ஆனென்ற வாறினது பொசித்த லாலும்
ஆகாத் தேறலது குடித்த லாலும்
பானென்ற பகலுறக்க மிராவி ழிப்பு
பட்டினியே மிகவுறுதல் பார மெய்தல்
தேனென்ற மொழியாற் மேற் சிந்தை யாகில்
சீக்கிரமாய் வாதமது செனிக்குந் தானே”

"ஆணான வரன்றனெளயே மதியா மாந்தர்
அகதிபர தேசியர்கட் கன்ன மீயார்
பானென்ற பகலுறக்க மிராவி ழிப்பு
பட்டினியே மிகவுருதல் பார மெய்தல்
கோனான குரமொழியை மறந்த பேர்கள்
கொலைகளவு பொய்காமங் குறித்த பேர்க்கு
ஊனான சடந்தன்னில் வாதம் வந்து
உற்பவிக்கும் வேதத்தி லுண்மை தானே.[3]"

According to the text, those who disrespect the parents, teachers, insulting the elders, blaspheming the Holy books - having cruel in their thoughts daytime sleep and sleeplessness at night will get Vatha diseases. Increased intake of bitter taste, astringent, sour foods, increased intake of cold water, excessive starvation, Sexual indulgence will produce Vatha diseases.

As per konganavar Vathakaviyam

“ஆச்சப்பா யிதன்கூறை நலதாய்ச்சொன்னோம்

ஆகாகா யிந்நூல்தான் காவியகாண்டத்தில்

வாச்சப்பா வாதத்தின் கூறைச்சொன்னோம்

வாதமதின் வாயுநிலை மயங்கிப்போகும்

காச்சப்பா கலங்கியது தியங்கிப்போகும்

கண்மனியே வதுக்குமத்திபந்தான் கேளு

மாச்சப்பா மக்கினிதான் மதுவோடொக்க

மார்க்கமதாய் கூடிவிளை யாடும்பாரே[5]''

According to the text 'Pararasasekaram'

"தொழில்பொறுகைப்புக்கார்த் தல்துவர்த்தல் விஞ்சுகினுஞ்சோறும்
பழையதாம் வரகு மற்றைப் பைந்தினை யருந்தி னாலும்
எழில்பெறப் பகலு றங்கி இரவினி லுறங்கா தாலும்
மழைநிகர் குழலி னாளே வாதங்கோ பிக்குங் காணே"

"காணவே மிகவுண் டாலுங் கருதுபட் டினிவிட் டா
மானனை யார்கண் மோக மறக்கினு மிகுந்திட்டாலும்
ஆணவ மலங்க டம்மை யங்ஙனே விடாத தாலும்
வானுதன் மடநல் லாளே வாதங்கோ பிக்குங் காணே"

"பாரினிற் பயப்பட்டாலும் பலருடன் கோபித் தாலும்
காரெனக் கருகி யோடிக் கழுமரத் துரத்தி ணாலும்
ஏர்பெறு தனது நெஞ்சின் மிகத்துக்க மடைந்திட்டாலும்
பாரியகாற்றி னாளும் படரினும் வாதங் காணும்"

"காலங்கண் மாறி யுண்ணுங் காரியத் தாலுந் தண்ணீர்
சாலவே யருந்தி ணலுஞ் சந்தியி லுட்கார்ந் தாலும்
கோலமாம் புளிப்பு நெய்மைக் குறைவற வருந்தி னாலும்
வாலவார் முலைநல் லாளேவாதமுற் பவிக்குங் காணே"

"உற்பவித் தெழுமப் போதே யுயர்புறத் துடியைப் பற்றித்
தெற்பறக் குடைந்து நோவுஞ் செய்துமேல நோக்கு மாகில்
விற்பொலி நுதலி னாளே மேலிடுங் குணங்க டம்மில்

சொற்பெறு வாதம் தோன்றுமென் றறிந்து கொள்க"

"தெரிந்துமுன் சொன்ன வண்ணஞ் செய்யகா லடியைப் பற்றி
மாந்தனைப் போற்றி மிர்த்து மற்றுமேல் நோக்கு மாகில்
அரன்றனைத் துதியா மாந்த ரனுசரிக் கின்ற கோயில்
சரிந்திடுங் குழலாய் வாதங் குடிபுகுஞ் சாற்றுங் காலே[6]"

The lines indicate that intake of acrid, bitter, pungent content foods, intake of grains, sleep in day time and instead loss of sleep in night time. Increased intake of food, frequent exposure to starvation, sexual indulgence, increased fear, increased anger, increased sadness, and higher exposure to air, changes in taking of diet timings will produce Vatha diseases.

According to the text 'Angaathipaatham'

"கானடையாலச் சத்தாற் கடும்பசி யாற்கோ பத்தால்
ஊனமி லிரவில் வார்த்தை யுரம்பெற விரைக்க லாலூண்
ஆனபின் முனிவால் மாரு தடுத்தடுத் துரைக்குஞ் சொல்லால்
ஈனமி லிகழ்ச்சி யான விகல்வாத கோபங் காணும்[7].

Excessive hunger and increased anger will produce Vatha disease.

According to the text Sarabenthirar Vaithiya Muraigal- Vatha Rokha Sikitchai

- Consuming low quantity of food
- Sexual indulgence
- Decreased sleep
- Excessive purgation or emesis.
- Excessive loss of blood during blood letting theraphy.
- Doing heavy work
- Control of reflexes like faeces,urination
- Conversion of undigested food juices into toxic substances(aamam)
- Trauma
- Control of hunger
- Injuries in uyirnilaigal

All these activities leads to the low level of saaram in ducts. So as to compensate this more of vaayu's were produced and affect one or more organs.

GENERAL CHARACTERS OF VATHA DISEASES:

"வாதம் வந்துற்ற போது வயிறது பொருமிக் கொள்ளும்
தாதவிழ்ந்திடுப்பு கைகால் சந்துகள் கடுப்பு தோன்றும்
சீதொரு மலமு நீருந் சிறுத்துடன் கடுத்து விழ
மாதவமரை மேல் வந்த வாதத்தின் குணமிதாமே[8]."

- ***Yugi Munivar Perunool Kaaviyam***

Vatha diseases are characterized by pain and swelling in joints, abdominal distension, constipation and burning micturition.

"காணப்பா வாதமீறில் கால்கைகள் பொருத்து நோவும்
யணப்பா குடல் புரட்டும் மலசலம் பொருமி கட்டும்
ஊணப்பா குளிருங் காய்ச்சல் உடம்பெல்லாம் குத்து வாய்வு
வீணப்பா குதமிறுக்கும் வியர்வையும் வேர்க்கும் தானே[9]."

- Agathiyar Vaithiya Kaaviyam -1500

Joint pain, nausea, constipation, oliguria, fever, rigor and sweating are produced due to vitiated vatham.

"வாதவீறு அன்னமிறங்காது கடுப்புண்டாம்வண்ணமுண்டாம்
மோதுகட்டு ரொகம் சுரமுண்டா மிருமலுமா முறங்காதேன்றும்
ஓது சூரிய வாத மனலாகு நடுக்க முண்டாம் போருள்களாய்த்
தீதனவே நரம்பிசித்து சந்துகள் தோறுங் கடுக்கும் தினமுந்தானே[10]"

– ***Thaerayar Vaagadam***

Loss of appetite, pain and redness, fever, cough, insomnia, shivering, pain in all joints is the characteristic features of vatha diseases, which is mentioned in Theraiyar Vaagadam.

FACTORS THAT INFLUENCE THE VATHA DISEASE:

A)Seasons which deranges Vatham :

In Muthuvenil kaalam, the solar radiation increases the evaporation of water content from the earth in turn produces dryness. Similarly the dryness is produced in our body and causes vatha diseases.

B)Diets which deranges Vatham:

According to the text 'Sababathi Kaiyedu'

"வளி தரு காய்கிழங்கு வரைவிலா தமிலல் கோழை
புளி தயிர் போன்மிகுக்கு முறையிலா வுண்டி கோடல்
குளிர்தரு வளியிற் றேகங் குனிப்புற வுலவல் பெண்டிர்
குளிதரு மயக்கம் பெற்றோர் கடிசெயல் கருவியாமல்[11]."

Excessive intake of tubers food items, irregularity in taking foods, taking curd, acrid food items, higher exposure to wind, living in higher attitudes, sexual indulgence, and increased exposure to chill weather will aggravate Vatha diseases.

C) Habitual characters which deranges Vatham:

InTheraiyar vagadam it is said as,

**"வெய்யிலில் நடக்கையாலும் மிகத்தண்ணீர் குடிக்கையாலும்
செய்யிழை மகளினரைச் சேர்ந்தனுப விக்கையாலும்
பையனே உண்மையாலும் பாகற்காய் தின்கையாலும்
தையலே வாதரோகம் சனிக்குமென் றறிந்து கொள்ளே[11]."**

Walking in hot climate, excessive intake of water, sexual indulgence, intake of bitter guard will leads to Vatha diseases.

In Aaviyalikkum Amuthamurai Surukkam

"சொல்லவே வாதமது மீறிற்றானால்
சோர்வடைந்து வாயுவால் தேகமெங்கும்
மெல்லவே கைகால்களசதி யுண்டாம்
மெய் முடங்கும் நிமிர வெண்ணா திமிருண்டாகும்
வெல்லவே வுடல் பொருமும் வயிருளைக்கும்
விரும்பி யன்னஞ் செல்லாது விந்துநட்டம்
சொல்லவே நாப்புளிக்கும் கழிச்சல் உண்டாகும்
கூறினார் மலையமுனி கூறினாரே[12]"

- Pricking sensation all over the body
- Pain all over the joints
- Difficulty in flexion and extension
- Nausea
- Loss of appetite
- Constipation
- Incontinence of urine
- Diarrhea

CLINICAL FEATURES:

According to Yugi Vaithiya Chinthamani the following clinical features were seen:

- Stiffness of the body
- Sweating
- Body pain
- Paleness of the body
- Yellowish discolouration of stools and urine.

CLASSIFICATION OF VATHA DISEASE:

In Yugi Vaithiya Chinthamani Perunool-800 described 80 types of Vatha disease

"என்னவே வாதமது எண்பதாகும்
ஏற்றமாம் பேருடைய வெழிலைக் கேளாய[8]"

3.1.3 THANDAGAVATHAM:

In Yugi Vaithya Chinthaamani, Yugi munivar has classified the Vatha diseases as 80 types and "Thandagavatham" is one among them. In Yugi as per the text the signs and symptoms of Thandagavatham may be correlated with the Lumbar Spondylosis in Modern science

அவயங்களைச் செயலறச் செய்து உடம்பைத் தண்டத்தைப் போல் வீழ்த்தி, நீட்டல், மடக்கல் அசைத்தல் முதலியவை இல்லாமல் சவத்தைப் போல் கிடக்கச் செய்யும் ஒர் வகை வாத நோய்.

Thandagavatham is a kind of rheumatic disorder characterized by great prostration in which the body is rendered like a log of wood, unable to stretch or fold the limbs and pass motion or urine.

தண்டகவாதம் = தண்டகம் + வாதம்

தண்டகத்தை பாதிக்கும் வாதம்.

தண்டகம்- வீணாதண்டம் என்னும் முதுகெலும்பு

(Vertebral column with spinal cord as the seat connecting mystic centres)

தேக விறைப்பு – Stiffness of the whole body, which is rigid and stiff like a rod.

Vatham - is a clinical condition characterized by pain, swelling, pricking sensation and loss of function due to vitiated Vatham, which is the principal humour of the body[13].

- T.V. Sambasivam Pillai Dictionary

தண்டக வாதம்

வழுத்தவே மூலாதா ரத்தை பற்றி
மருவியே மேலேறி முதுகு மட்டாய்
விழுத்தவே சிரசில் வந்து வியர்வு மாகி
விகுவாக நோவாகி மேனி கன்றிப்
பழுத்தவே யுடம்பெங்கும் பஞ்சு போலாகும்
பாங்கான மலசலமு மஞ்ச ளாகும்

குழுத்தவே தண்டகமாம் வாதந் தன்னைக்
கூறினோங் குணமெலாம் கூர்ந்து பாரே

கூர்ந்திட்ட மலசங்கள் துரிதமானால்
கொண்டடக்கிப் பின்புதான் கொடிதாய்த் தள்ளி
ஊர்ந்திட்ட சரிரத்தி லுதிர மீறி
உறத்தேய்த்துத் தலையதனி லெண்ணெய் வார்க்கில்
வார்ந்திட்ட வழிநடக்கில் மெத்த வந்தான்
வாதந்தா னுற்பவித்து நடைகொடாமல்
நார்ந்திட்ட நரம்போடு எலும்பிற் சூழ்ந்து
நனுகியே யோடிநெஞ்சி லேறுந்தானே[3]

-யூகி வைத்திய சிந்தாமணி 800

நோய் வரும் வழி:

- முதுகுத் தண்டின் கீழ்புறமிருந்து தலைவரையிலும் கிளம்பிய வாயுவினால் ஏற்படும்
- தலையில் பாரம் சுமதல்

குறிகுணங்கள்:

- உடல் இறுகுதல் - Stiffness
- உடல் வலித்தல் - Pain
- உடல் பழுத்து பஞ்சு போல் வெளுத்தல் - Anemia
- தலை முழுகல்,அதிக தூரம் நட்த்தல் முதலியவற்றால் வளிகுற்றம் மீண்டும் அதிகரித்து நரம்பு எலும்புகளை பற்றி சூழ்ந்து நடக்க முடியமல் செய்து அவ்வாயு நெஞ்சுவரையிற் பாயும்[3]

In the text, Vatha Noi Maruthuvam:

"தண்டுவாதத்தின் குணத்தை சாற்றக்கேளாய் மடமயிலே
பண்டேதண்டுமிகஊதி பற்றிபொருமி கொண்டிருக்கும்
விண்டோம்சில போதுளைவுண்டாம் மிகுந்த வாட்டமுண்டாம்
கொண்டெ மனமும் தளர்ச்சியும் கோபமதிகம் காணும் என்றே[14]."

– ***Vatha Noi Maruthuvam.***

There will be inflammation of spine. Generalized tiredness, mental depression and excessive anger.

இடுப்பு வாதம்

"இடுப்பது கடுத்து உளைந்து இடைவிடா வலித்துக் கொள்ளும்
முடுக்கமாய் குனியவே தான் முடுகியே நிமிரவொட்டாது
துடுக்கென வந்து அடரும சுரமது அற்பம் அற்பம்
சடக்கென இடுப்பைச் சுற்றி சார்ந்திடும் வாதம்தானே
நடப்பெனபோது மெத்த நய்யவே வலிக்குமென்ன
கெடப்பேனபோதும் சற்றே குணமென தோன்றுமாகில்
படுப்பென போதும் யாமம் பாகியால் வாதமுண்டாம்
இடுப்பென சேரும் வாதத்தியலிது எண்ணுவீரே[14]"

- Vatha Noi Maruthuvam

The clinical features are:-

- Continuous pain in the low back region.
- Difficulty in bending forward and standing erect from that position.
- Sudden onset of fever.
- Warmth around the low back region.
- Pain increases on walking and decreases on lying.

3.1.4 SIDDHA PATHOPHYSIOLOGY:

Changes in lifestyle, occupation, food and other habits lead to development of this disease by causing derangement of Muththathu. Improper food habits alter the elemental composition directly while the other causes lead to derangement of these elements indirectly. When the elemental composition is altered, the Uyir Thaathukkal or the three humours which are made up of these elements naturally also get

deranged. This simultaneously leads to derangement of seven Udal Thaathukkal, which produces symptoms of the disease 'Thandagavatham'.

DIAGNOSIS

Diagnosis of Thandagavatham in Siddha is based on Envagai Thervugal and also on the other factors like

1. Uyirthaathukkal
2. Udalthaathukkal
3. Gnanenthiriyam
4. Kanmenthiriyam

THREE UYIR THAATHUKKAL

1. Vatham

In **Thandagavatham** patients among the ten types of vatham; the following two types are affected and causing symptoms accordingly.

1. Viyaanan - Affected (producing restriction of joint movements)

2. Samaanan - Affected (deranging the other four types of vatham)

2. Piththam

Among the Five types of pitham (Analaagam, Ranjagam, Pirasagam, Alosagam and Saathagam) the Saathaga piththam only affected in Thandagavatham patients and causing difficulty in walking, sitting and bending forward postures.

3. Kabam

In the five types of Kabam (Avalambagam, Kilethagam, Pothagam, Tharpagam and Santhigam) Avalambagam and Santhigam affected in Thandagavatham patients and causing pain in low back region and restriction of movements in the lumbo sacral junctions.

SEVEN UDAL THAATHUKKAL:

Among the seven Udal Thaathukkal (Saaram, Senneer, Oon, Kozhuppu, Enbu, Moolai and Chukkilam / Suronitham) the following four are commonly affected in Thandagavatham patients.

1. Saaram - Tiredness and weakness

2. Oon- Muscular pain, muscle spasm

3. Kozhuppu - Pain in low back region, restriction of movements.

4. Enbu - Weakness of bone

GNANENTHIRIYAM

The Thandagavatham patients are having the clinical features of pain, numbness and burning sensation especially in lower limbs. These are felt through Mei.

KANMENTHIRIYAM

In Thandagavatham patients, Kaal is affected. This is due to radiating pain, difficulty in walking etc.

NOI KANIPPU VIVADHAM (DIFFERENTIAL DIAGNOSIS)

Some types of Vatha diseases are mimicking like Thandagavatham. Careful and clear history taking and examination will reveal the correct diagnosis.

They are: 1. Aasuvathamba vatham. 2. Ooruthamba vatham.

3.1.6 MANAGEMENT:

In Siddha system of Medicine, the line of treatment plays an important role in the normalization of Thirithosam. In Siddha system, the treatment is based on mukkutram theory. The main goal of the treatment was not only healing the disease but also the prevention of disease and rejuvenation of udalkattugal.

In Thandagavatham Usually Vitiated vatha humour is to be normalised. Detoxification of the body, Rejuvenation and Toning the spine is done with appropriate Internal Medicines. During the External Therapy, Special Varma massage with Medicated Oil, Steam bath, Pizhichil or Oil immersion technique and other physical manipulating techniques are used to relieve spasms, inflammatory changes, nerve compressions and strengthening the spine.

INTERNAL MEDICINE: *NAGA CHENDHURAM*, 65 mg with honey twice daily, after food for the period of 48 days.

EXTERNAL MEDICINE: *MOOLAYOGA NIRKUNDI THYLAM* with *VARMAM* therapy.

DIETARY REGIMENS:

According to 'Siddha Maruthuvanga Churukkam

செங்கழு நீர்கோஷ்டந் தேன்மிளகு நல்லெண்ணெய்

தங்குபெருங் காயந் தழுதாழை– எங்கெங்கும்

கூட்டுசிறு முத்துநெய் கோதில் உழுந்திவைகள்

வாட்டுமனி லத்தை மதி[15]

1. Senkazhuneer
2. Koshtam
3. Honey
4. Pepper
5. Gingely oil
6. Perungaayam
7. Thazhuthaazaai
8. Castor oil
9. Black gram

These were the food items for the Vatha patients.

Tender vegetables:

- Avarai (*Dolichos lablab*)
- Aththi (*Ficus racemosus*)
- Murunkai (*Moringa oleifera*)
- SunMullangi (*Raphanus sativus*)
- Thoothuvelai (*Solanum trilobatum)*

- Pirandai (*Cissus quadrangularis*)
- Karunai kizhangu (*Colocasia antiquarum*)
- Kathiri (*Solanum melongena*)

Greens:

- Sirukeerai (*Amaranthus tricolor*)
- Mookkurattai (*Boerrhavia diffusa*)
- Puliyaarai (*Hibiscus cannabinus*)
- Ponnankanni (*Alternanthera sessili)*
- Manali (*Gisekia pharanaceoides*)
- Mudakkaruththaan (*Cardiospermum halicacabum*)

Pulses:

- Ulunthu (*Vigna mungo*)
- Pottukkadalai fried (*Cajanus cajan*)

Dairy products:

- Cow's milk, buttermilk

AVOID:

- Tubers except karunai kizhangu(*Colocasia antiquorum*)
- Maaporulghal(Carbohydrates)
- Vaazhai(tender Musa paradisiaca)
- Kaaramani(*Vigna unguiculata*)
- Verkkadalai(*Arachis hypogea*)
- Pattaani(*Pisum sativum*)
- Mochai(*Lablab purpureus*)
- Kezhvaragu(*Eleusine coracana*)
- Kambu(*Pennisetum typhoideum*)
- Solum(*Sorghum vulgare*)
- Sour,astringent foods

OTHER ADVICES:

- Activities involving excessive use of joints were identified and avoided.
- Brief period of rest for involvement of joints
- Regular exercises.
- Avoid exposure to chilled air.

3.2 MODERN ASPECT OF DISEASE

Low back ache is a very common problem and has a ubiquitous distribution. Among the galaxy of causative factors both spinal and extra spinal, the common cause for low backache is the lumbar disc disease. Bad posture plays a very significant role in the genesis of this disease[16].

3.2.1 Lumbar Spine:

The lumbar spine refers to the lower back, where the spine curves inward towards the abdomen. It starts about five or six inches below the shoulder blades, and connects with the thoracic spine at the top and extends downward to the sacral spine.

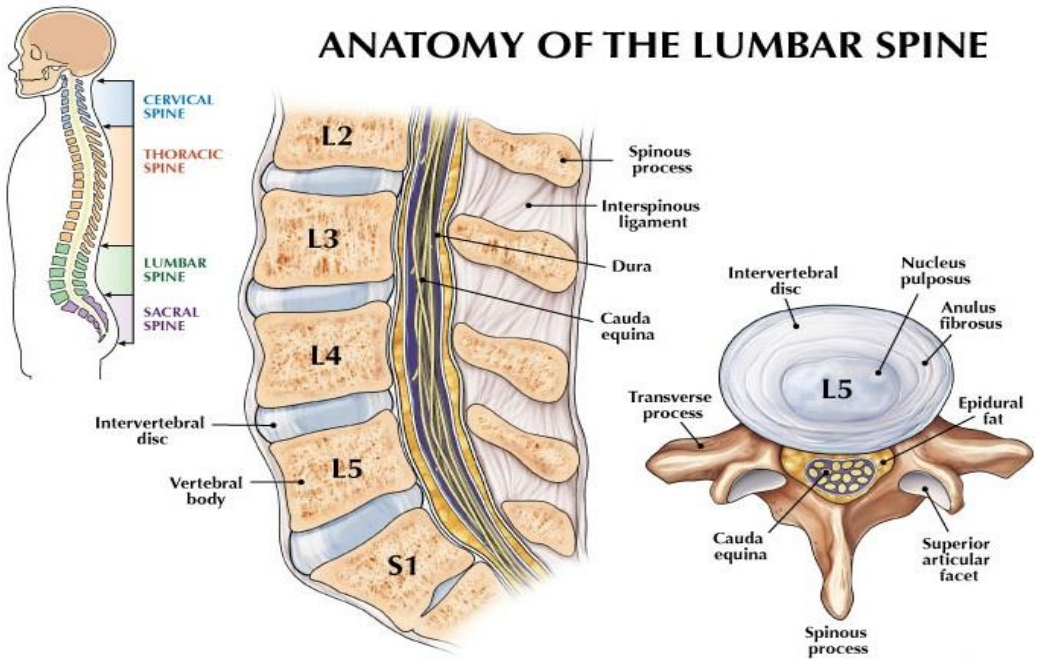


Fig 3.2.2

The lumbar spine consists of 5 moveable vertebrae numbered L1-L5. The complex anatomy of the lumbar spine is a remarkable combination of these strong vertebrae, multiple bony elements linked by joint capsules, and flexible ligaments/tendons, large muscles, and highly sensitive nerves. It also has a complicated innervation and vascular supply.

The lumbar spine is designed to be incredibly strong, protecting the highly sensitive spinal cord and spinal nerve roots. At the same time, it is highly flexible, providing for mobility in many different planes including flexion, extension, side bending, and rotation.

TACKLING THE TERMINOLOGY:

Lumbar is derived from the Latin word "lumbus," meaning lion, and the lumbar spine earns its name. It is built for both power and flexibility - lifting, twisting, and bending.

ANATOMY:

The lumbar vertebrae are five lumbar vertebrae of which the first four are typical and the fifth is atypical. A lumbar vertbra different from other vertebrae one is large size and other one is the absence of costal facets on the body.

The lumbar vertebrae, numbered L1-L5, have a vertical height that is less than their horizontal diameter. They are composed of the following 3 functional parts:

1. The vertebral body, designed to bear weight
2. The vertebral (neural) arch, designed to protect the neural elements
3. The bony processes (spinous and transverse), which function to increase the efficiency of muscle action

The lumbar vertebral bodies (vertebrae) are the heaviest components, connected together by the intervertebral discs. The size of the vertebral body increases from L1 to L5, indicative of the increasing loads that each lower lumbar vertebra absorbs. Of note, the L5 vertebra has the heaviest body, smallest spinous process, and thickest transverse process.

The intervertebral discal surface of an adult vertebra contains a ring of cortical bone peripherally termed the epiphysial ring. This ring acts as a growth zone in the young while anchoring the attachment of the annular fibers in adults. A hyaline cartilage plate lies within the confines of this epiphysial ring.

The figure on the left depicts the general characteristics of the first through fourth lumbar vertebrae. The fifth vertebra contains certain peculiarities, which are detailed below.

Anatomy of Lumbar vertebrae:[18]

A. Body
B. Arch is composed of pedicles - 2,
C. Laminae - 2 ,
D. Different bony processes (1 spinous, 4 articular, 2 transverse),
E. Joined together by facet joints and ligaments.
F. Vertebral foraman

The figure on the below depicts the general characteristics of the first through fourth lumbar vertebrae. The fifth vertebra contains certain peculiarities.

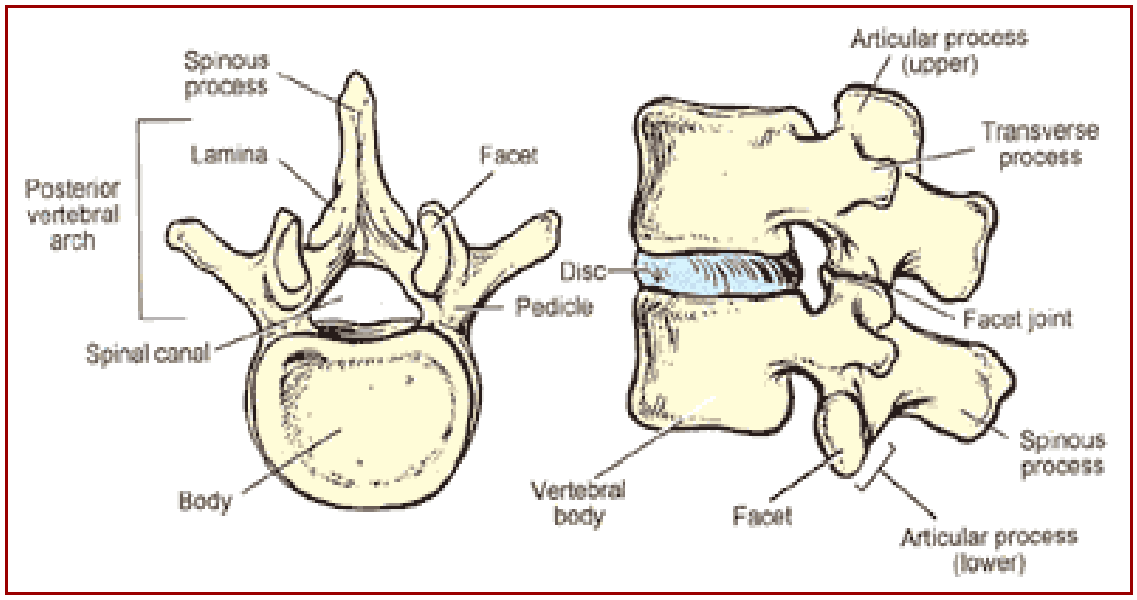


Fig 3.2.2

Lumbar vertebral joints:

There are two types of joint in the lumbar spine. Both of these articulations are not unique to the lumbar vertebrae, and are present throughout the vertebral column.

A. symphyseal joints:

The mobility of the vertebral column is provided by the symphyseal joints between the vertebral bodies, formed by a layer of hyaline cartilage on each vertebral body and an intervertebral disc between the layers.

B. Synovial joints

The synovial joints between the superior and inferior articular processes on adjacent vertebrae are termed the facet joints (also known as zygapophysial joints or Z-joints). The facet joints have been described as finger-like, and they link the vertebrae together. The facet joints are located at the posterior area of the spinal column. They permit simple gliding movements. The movement of the lumbar spine is largely confined to flexion and extension with a minor degree of rotation (see the image below). The region between the superior articular process and the lamina is the pars interarticularis. A spondylolysis occurs if ossification of the pars interarticularis fails to occur.

Lumbar intervertebral discs[19]

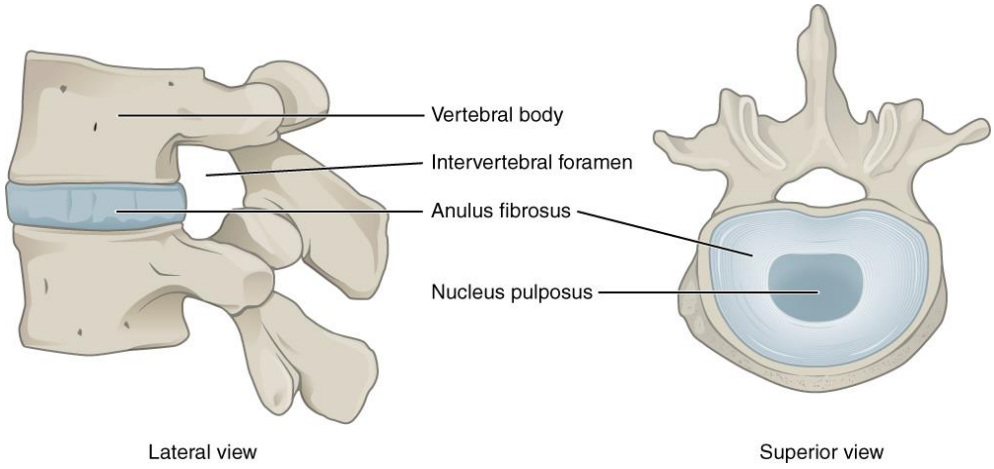


Fig 3.2.3

Discs form the main connection between vertebrae. They bear loading during axial compression and allow movement between the vertebrae. Their size varies depending on the adjacent vertebrae size and comprises approximately one quarter the length of the vertebral column. Each disc consists of the nucleus pulposus, a central but slightly posterior mucoid substance embedded with reticular and collagenous fibers, surrounded by the annulus fibrosus, a fibrocartilaginous lamina.

The annulus fibrosus can be divided into the outermost, middle, and innermost fibers. The anterior fibers are strengthened by the powerful anterior longitudinal ligament

(ALL). The posterior longitudinal ligament (PLL) affords only weak midline reinforcement, especially at L4-5 and L5-S1, as it is a narrow structure attached to the annulus. The anterior and middle fibers of the annulus are most numerous anteriorly and laterally but deficient posteriorly, where most of the fibers are attached to the cartilage plate.

NATURAL HISTORY OF LUMBAR DISC DISEASE[16]

Degenerative process is divided into three stages

1 .**Stage of dysfunction**

- Seen between 15 and 45 years of age
- Circumferential and radial tears are seen in the disc annulous
- Localized synovitis of the facet joints is seen

2**. Stage of instability**

- Seen between 35 and 75 years of age.
- There is an internal disruption of the disc.
- Progressive disc resorption takes place.
- Degeneration of facet joints with lax capsules, subluxation and joints erosion are seen.

3. Stage of stabilization

- Seen over 60 years of age
- Progressive development of hypertrophic bone about the disc and facet joints leading to segmental stiffening or frank ankyloses is seen.
- Disc herniation is considered as a complication of disc degeneration in stages II and I.Spinal stenosis is a complication in late instability and early stabilization stages. Disc can herniate either into the body as Schmorl's node or posteriorly towards the canal compressing the nerve roots

LUMBAR VERTEBRAL LIGAMENTS:

The joints of the lumbar vertebrae are supported by several ligaments. They can be divided into two groups; those present throughout the vertebral column, and those unique to the lumbar spine.

Present throughout Vertebral Column

- **Anterior and posterior longitudinal ligaments**: Long ligaments that run the length of the vertebral column, covering the vertebral bodies and intervertebral discs.
- **Ligamentum flavum:** Connects the laminae of adjacent vertebrae.
- **Interspinous ligament:** Connects the spinous processes of adjacent vertebrae.
- **Supraspinous ligament**: Connects the tips of adjacent spinous processes.

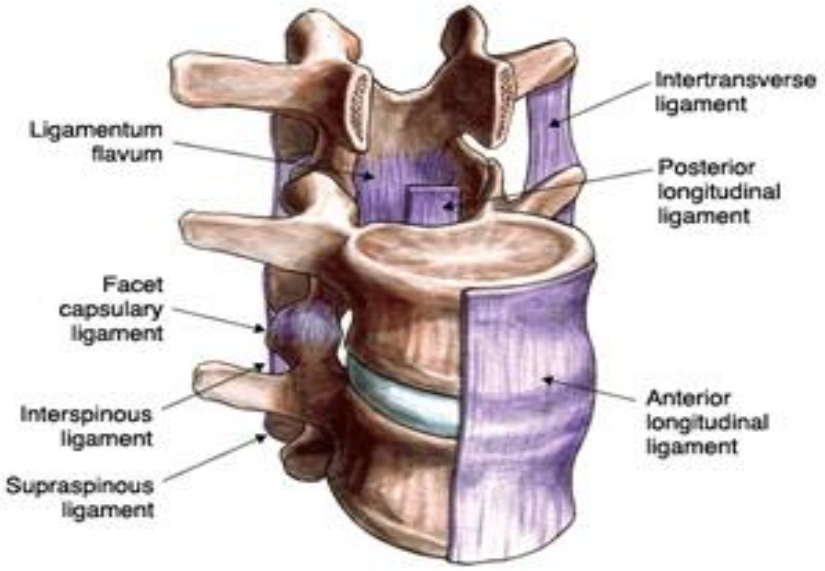


Fig .3.2.4

Unique to Lumbar Spine:

The lumbosacral joint (between L5 and S1 vertebrae) is strengthened by the **iliolumbar ligaments**. These are fan-like ligaments radiating from the transverse processes of the L5 vertebra to the ilia of the pelvis

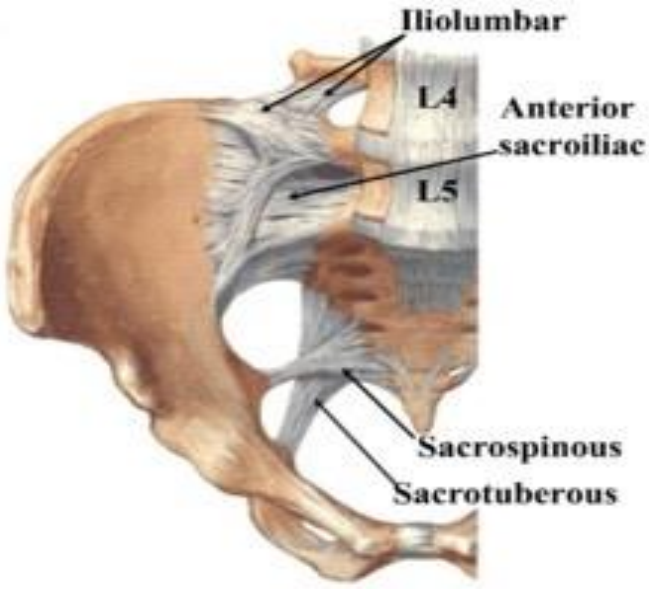


Fig 3.2.5

LUMBAR SPINE MUSCULATURE:

Four functional groups of muscles govern the lumbar spine and can be divided into extensors, flexors, lateral flexors, and rotators. Synergistic muscle action from both the left and right side muscle groups exist during flexion and extension of the Lumbar spine.

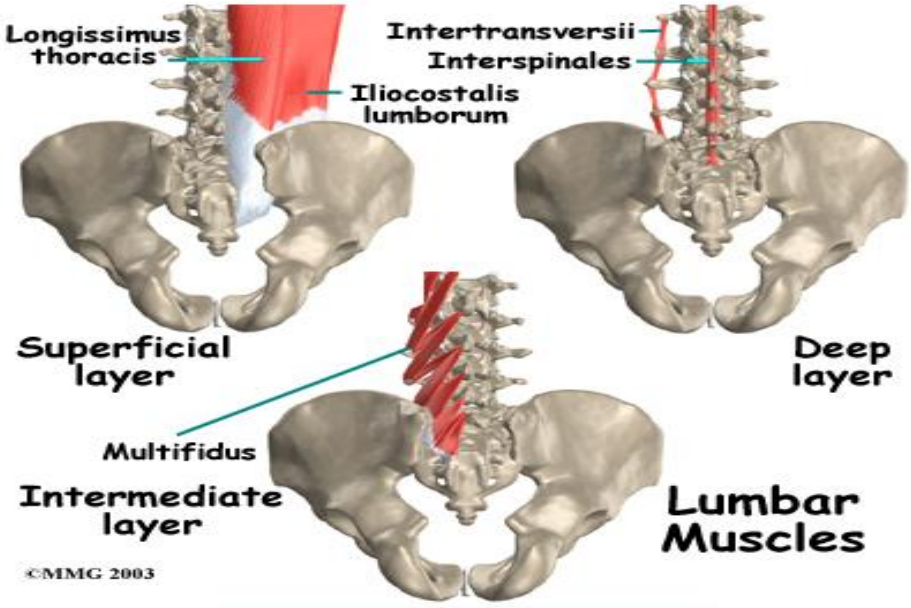


Fig 3.2.6

S.NO	LUMBAR MUSCLES	FUNCTION	NERVE
1.	PSOAS MAJOR	Flexes thigh athip joint & vertebral column	L_2 , L_3 sometimes L1 or L4
2.	INTERTRANSVERSARII LATERALIS	Lateral flextion of vertebral column	Ventral primary division of spinal nerve
3.	QUADRATUS LUMBORUM	Lateral flextion of vertebral column	T12, L1
4.	INTERSPINALES	Extends vertebral column	Dorsal primary divisions of spinal nerves
5.	INTERTRANSVERSARII MEDIALES	Lateral flextion of vertebral column	Dorsal primary divisions of spinal nerves
6.	MULTIFIDUS	Extends & rotates vertebral column	Dorsal primary divisions of spinal nerves

SPINAL CURVES:

When viewed from the side, an adult spine has a natural S-shaped curve. The lower spine curves slightly inward, toward the abdomen. This inward curve of the spine is called lordosis. The curves work like a coiled spring to absorb shock, maintain balance, and allow range of motion throughout the spinal column.

RISK FACTORS

Jobs requiring heavy and repetitive weightlifting

Operation of motor vehicles

Cigarette smokers and tobacco consumers

Women with greater number of pregnancies.

Obesity and other cardiovascular risk factors.

Monotonous work, working overtime, etc..

Improper postural habits.

3.2.2 LUMBAR SPONDYLOSIS:

Low back ache is a very common problem and has a ubiquitous distribution. Among the galaxy of causative factors both spinal and extra spinal, the common cause of low backache seems to be the lumbar disc disease. Bad posture plays a very significant role in the genesis of this disease.[16]

This is a degenerative disorder of the lumbar spine characterised clinically by an insidious onset of pain and stiffness and radiologically by osteophyte formation.[17]

Spondylosis, noninflammatory degenerative disease of the spine resulting in abnormal bone development around the vertebrae and reduced mobility of the intervertebral joints. It is primarily a condition of age and occurs much more commonly in men than in women; onset of symptoms is gradual, but untreated spondylosis will progress to disabling tingling pain, limited motion, and partial paralysis in affected areas of the body. The high incidence of simultaneous degenerative changes to the intervertebral disc, vertebral body[30]

SYNONYMS:

1.Lumbar arthrosis,

2.Lumbar spondylitis,

3.Hypertrophic arthritis

4.Osteoarthritis of lumbar spine.

TACKLING THE TERMINOLOGY[20]:

The terms lumbar osteoarthritis, disk degeneration, degenerative disk disease, and spondylosis are used in the literature to describe anatomical changes to the vertebral bodies and intervertebral disk spaces that may be associated with clinical pain syndromes.

EPIDEMIOLOGY [20]:

Lumbar spondylosis is present in 27-37% of the asymptomatic population. In the United States, more than 80% of individuals older than 40 years have lumbar spondylosis, increasing from 3% of individuals aged 20-29 years.

Internationally, lumbar spondylosis can begin in persons as young as 20 years. It increases with, and perhaps is an inevitable concomitant of, age.

Approximately 84% of men and 74% of women have vertebral osteophytes, most frequently at T9-T10 and L3 levels. Approximately 30% of men and 28% of women aged 55-64 years have lumbar osteophytes. Sex ratio reports have been variable but are essentially equal. Spinal osteophytosis in postmenopausal Japanese women correlated with the *CC* genotype of the transforming growth factor $ß_1$ gene.

CAUSE:

Lumbar spondylosis appears to be a nonspecific aging phenomenon. Most studies suggest no relationship to lifestyle, height, weight, body mass, physical activity, cigarette and alcohol consumption, or reproductive history. Spondylosis, or age-related changes in your spinal bones and other tissues, is a common condition that affects most of us at some point in our lives.

1.Bad posture and chronic back strain is the commonest cause.

2.Other causes are, previous injury to the spine,

3.previous disease of the spine, birth defects and old intervertebral disc prolapse.

Over time, the changes of spondylosis can put pressure on spinal nerves where they join the spine (nerve roots). In advanced cases, bones, discs or other tissues can press on the spinal cord.

The major risk factor for spondylosis is aging. By age 60, most people have signs of lumbar spondylosis that can be seen on an X-ray. Other risk factors for spondylosis are:

- Past neck injury (often several years before)
- Severe arthritis
- Past spine surgery
- Being over 40 is a risk factor for lumbar spondylosis.

PATHOGENESIS[20]:

The high incidence of simultaneous degenerative changes to the intervertebral disk, vertebral body, and associated joints suggests a progressive and dynamic mechanism, with interdependent changes occurring secondary to disk space narrowing.

Intervertebral disks are believed to undergo what Kirkaldy Willis and Bernard first coined a "degenerative cascade" of three overlapping phases that may occur over the course of decades[32].

Phase I (Dysfunction Phase)

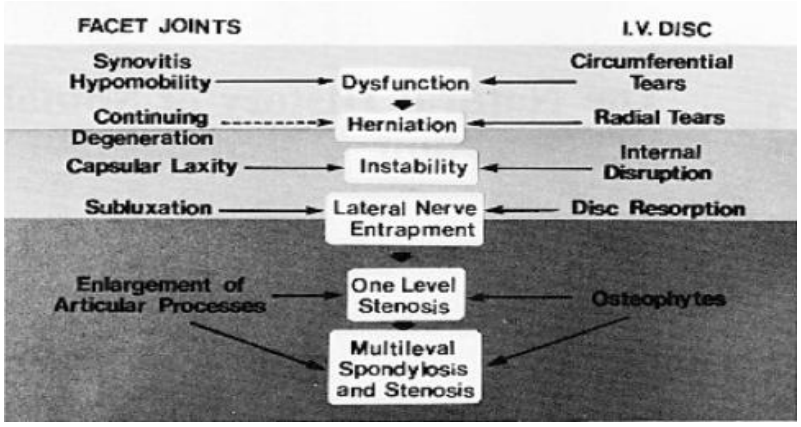
The initial effects of repetitive microtrauma with the development of circumferential painful tears of the outer, innervated anulus, and associated end-plate separation that may compromise disk nutritional supply and waste removal. Such tears may coalesce to become radial tears, more prone to protrusion, and impact the disk's capacity to maintain water, resulting in desiccation and reduced disk height. Fissures may become ingrown by vascular tissue and nerve endings, increasing innervation and the disk's capacity for pain signal transmission.

Phase II (Instability Phase)

This is characterized by the loss of mechanical integrity, with progressive disk changes of resorption, internal disruption, and additional annular tears, combined with further facet degeneration that may induce subluxation and instability.

Phase III (Stabilization Phase),

Continued disk space narrowing and fibrosis occurs along with the formation of osteophytes and transdiscal bridging.



Biochemical research exploring osteophyte formation supports the above process. Osteophyte lipping is believed to form at periosteum through the proliferation of peripheral articular cartilage which subsequently undergoes endochondral calcification

and ossification. Changing weight mechanics and pressure forces as well as alterations in oxygen tension and dynamic fluid pressure appear to be influential factors in osteophyte formation. Mesenchymal stem cells of the synovium or periostium are likely precursors, with synovial macrophages and a milieu of growth factors and extracellular matrix molecules acting as probable mediators in this process.

CLINICAL FEATURES:

LOW BACKACHE:

Back pain is common in the second decade, disc disease and disc herniation in the third and fourth decade.

RADICULOPATHY:

This refers to pain in the distribution of the sciatic nerve and is invariably due to disc herniation. This is called Sciatica.

NERVE ROOT COMPRESSION:

About 95 % of the disc prolapse takes place through the L4-L5 region compressing the L5 nerve root.

RADIOGRAPHY

X ray for back is not very reliable as normal findings are observed in 7-46% of the cases. Disc space is reduced in old cases

ETIOLOGY/RISK FACTORS:[20]

What factors mediate this degenerative progression what leads a large portion of the population to manifest spondylosis, even early on in their lives? Given the substantial variability in the number and degree of spine changes observed in individuals and the wide range of clinical presentations, answers to these questions hold promise to broaden treatment options.

The influence of age

Large studies of osteoarthritis have long recognized the aging process to be the strongest risk factor for bony degeneration, particularly within the spine. An extensive autopsy study in 1926 reported evidence of spondylitis deformans to increase in a linear fashion from 0% to 72% between the ages of 39 and 70 years. A subsequent autopsy study by Miller et al. similarly noted an increase in disk degeneration from 16% at age 20 to about 98% at age 70 years based on macroscopic disk degeneration grades of 600 specimens. Other studies corroborate this finding.

The associations are never the less imperfect. Kramer found increasing age to be significantly associated with osteophyte formation but not predictive of the degree of disk space narrowing observed in a retrospective review of radiographs of women. She observed significant variability, noting "although few younger women have high average scores, some older women have no radiographic sign of OA, while others are severely affected." Multiple studies have also demonstrated the presence of significant lumbar degeneration to be evident even within the first two decades such variability within members of the same age category suggests the influence of other contributing factors.

The impact of activity and occupation

Disk generation has long been associated with certain activities. Retrospective studies cite Body Mass Index (BMI), incident back trauma, daily spine loading (twisting, lifting, bending, and sustained nonneutral postures), and whole body vibration (such as vehicular driving) to be factors which increase both the likelihood and severity of spondylosis .While these correlations exist, a study following progressive radiographic changes in lumber DDD did not find significant associations with the extent of physical activity, noting only age, back pain, and associated hip OA to be predictive of DDD and osteophyte changes.

DIAGNOSIS:

A diagnostic approach the initial evaluation for patients with low back pain begins with an accurate history and thorough physical exam with appropriate provocative testing[34].

SCIATIC NERVE STRETCH TEST: Patient is in supine position ,one of the leg is raised with one hand, ipsilateral knee is pressed over by other hand. This test produce tension in the hamstring muscles which in turn compresses the sciatic nerve and produces pain.

BREGARD'S TEST: After doing SLRT, dorsiflex the foot. This further tension on the sciatic nerve and the patient complains of pain.

LASEGUE'S TEST: Here the hip is flexed, knee is flexed and the leg is slowly straightened.

BIICKLING'S SIGN: Perform as SLRT until the patient complaints of pain. Now ask the patient to flex the knee. Pain decreases due to relief of tension on the nerve.

SICARD'S TEST: After doing SLRT, dorsiflex the great toe. This puts further tension on the sciatic nerve and the patient complains of the pain.

FAJERSZTAJN'S TEST: After doing SLRT, dorsiflex the foot. This tenses the sciatic nerve and the patient complains of the pain.

WEEL LEG RAISIN TEST: Here, the patient is asked to perform SLRT of the normal limb. If the patient complains of pain on the affected side, then it is highly suggestive of disc prolapse and this is a pathognomonic test which has more relevance then the conventional SLRT.

BILATERAL STRAIGHT LEG RAISING TEST: Here, patient is asked to raise both the legs simultaneously. This is a test for the sacroiliac joint rather than the spine. During the first 70 degree, stress is on the SI joint, over 70 degree stress is on the lumbar spine.

FEMORAL NERVE STRETCH TEST (REVERSE SLRT): Here, the patient is in prone position and is asked to lift the leg straight. This puts a stretch on the femoral nerve. If the patient complains of the pain it indicates high level disc prolapse (L1-L2-L3).

INVESTIGATIONS :

Diagnosis is mainly based on X-rays

1. X- Ray Lumbar Spine

- AP view – look for vertebral column, any pedicular lesion.
- Lateral view – shape & size of vertebral body.

Oblique view– side to side collapse, Inter vertebral disc space

2. Computed Tomography(CT):

It is useful in non invasive painless outpatient procedure. It gives a cross sectional study of the pathology. CT helps to detect the foraminal structures and lateral disc prolapse.

3. MRI

MRI helps to detect intra-spinal lesion, examine entire spine, identifies degenerative disc.

4. Myelograph

Consists of injecting radio opaque dye (myodil was used earlier now it is the water soluble iopamiro300, which is being used) into the spinal canal and taking radio graphs of the back

5. Other Tests: Discography, Bone scans, EMG

DIFFERENTIAL DIAGNOSIS

1. Multiple myelomas
2. Extra dural tumors.
3. Peripheral neuropathy
4. Herpes zoster
5. Multiple sclerosis
6. Ankylosing spondylitis
7. Vascular insufficiency
8. Osteoporosis with stress fractures

COMPLICATIONS

- Severe spinal stenosis
- Paraplegia
- Cauda equina syndrome
- Neurogenic claudication.

DRUG REVIEW OF SIDDHA ASPECT- INTERNAL

3.3 INTERNALMEDICINE: NAGA CHENDHURAM[12]

INGREDIENT

INTERNAL DRUG: NAGA CHENDHURAM

INGREDIENTS[22]:

1. Nagam (Zinc)
2. Manosilai(*Red* Orpiment)
3. Soodham(Mercury)
4. Veeram (Hydrargyrum per chloride)
5. Gandhagam (Sulphur)
6. Ilupai nei (Oil of *Madhuga longifolia)*
7. Venkolinchi ver **(***Baptisia bracfeata*)
8. Potralai kayanthagarai **(***Eclipta prostrata*)

NAGAM (zincum)

நாகம் பொதுகுணம்

“மேகங் கிளர்பேதி வெட்டையழலைத் தணிக்கும்

வேகங் கிராணி விலக்குங்காண் - போகாப்

பரியமுளைப் புண்ணை பயித்தியத்தைப் போக்கும்

அரியதுத்த நாக் மது[35]”

PROPERTIES OF NAGAM :

1	**Taste**	**Thuvarppu.**
2	**Actions**	**Astringent, Haemostatic, Alterative.**
3	**Types**	**Perugan nagam, Sirugan nagam**
4	**Uses**	**Veneral diseases, Pitha noi, Diarrhoea**

RASAM (HYDRARGYRUM)

ரசம் பொதுகுணம்

“விழிநோய் கிரந்திகுன்மம் மெய்ச்சூலை புண்குட்

டழிகாலில் விந்துவினால் அத்தை – வழியாய்

புரியு விதி யாது புரியினோ யெல்லாம்

இரியுவிதி யாது மில்லை[36].”

PROPERTIES OF RASAM:

PROPERTIES OF RASAM

1	**It is under**	**Panchasudham**
2	**Best quality**	**Mercury obtained from cinnabar is considered as pure and suitable for medical purpose.**
3	**Taste**	**Six testes present, Dominant is sweat**
4	**Potency**	**Thatpam and veppam**
5	**Actions**	**Tonic, Alterative, purgative, Diuretic, Anti septic**
6	**Types**	**Rasam, Rasendhiran, Sootham, Misaragam, Baaratham**.
7	**Uses**	**Eye diseases, Veneral diseases, Hanson’s diseases, and Ulcer and skin diseases.**
8	**Toxicity symptoms**	**Loosening of teeth, Ascities, Deafness, Bleeding disorder.**

GANTHAGAM (SULPHUR)

"நெல்லிக்காய்க் கந்திக்கு நீள்பதினெண் குட்டமந்தம்
வல்லை கவிசைகுன்ம வாயுகண்ணோய் - பொல்லா
விடக்கடிவன் மேகநோய் வீறுசுரம் பேதி
திடக்கிரசு ணீகபம்போனந் தேர்[37]."

ARTIFICIAL PREPARATION OF GANTHAGAM:

நெல்லிக்காய் கெந்தக வைப்பு

கண்டுபார் நெல்லிக்காய் கெந்தகத்தை
கட்டாக வைப்பதற்கு வகையைக்கேளு
மண்டலமே யானாக்கால் யெடுத்துப்பாரு
வாகான நெல்லிக்காய் போலாம் பாரே[38]."

PROPERTIES OF GANTHAGAM:

TABLE4: PROPERTIES OF GANTHAGAM

1	**Taste**	**Kaippu, Thuvarppu.**
2	**Actions**	**Astringent, Laxative, Alterative, Insecticide**
3	**Types**	**White, Red, Golden, Black colour**
4	**Uses**	**18 types of skin diseases, liver enlargement, leprosy, eczema.**
5	**Excretion**	**excreted through sweat, milk, urine**

MANOSILAI (ARSENIC BI SULPHIDE[22])

மனோசிலை பொதுகுணம்

"கொடிய குஷ்டம் காய்ச்சல் நடுக்கலஜ கல்லியிரைப்

புச்சிலந்திப் பேசறும னோசிலைக்குப் பேசு."

ARTIFICIAL PREPARATION OF MANOSILAI:

மனோசிலை வைப்பு

நாடும்பார் மனோசிலையின் வைப்புக்கேளு

நலமான அரிதாரம் பலந்தானொன்று

. . . . . .

கூடும்பார் வெள்ளையது நிறந்தானப்பா

கூர்ந்துசிவப் பாயிருக்கும் உள்ளேதானே[39]."

PROPERTIES OF MANOSILAI:

TABLE6: PROPERTIES OF MANOSILAI[22]

1	**Actions**	**Alterative, Febrifuge, Tonic,**
2	**Types**	**Two types Natural and Artificial**
3	**Uses**	**Chronic skin diseases, leprosy, Intermittent fever, Ajakalliga rogam, Asthma, Insect bites.**

Veeram:

பொதுகுணம்

குன்மமொடு குட்டங் கொடியவனி லத்திரடு

துன்மாங் கிசப்பெருக்கஞ் சூலைநோய்- வன்மையுறு

காமியப்புண் ணாதியநோய் கண்டாற்சவ்

வீரனெனுஞ் சாமிநா மத்தையுச் சரி[40]

1.	**It is under**	**Panchasudham**
2.	**Taste**	**Bitter**
3.	**Potency**	**Veppam**
4.	**Actions**	**Alterative, Anti septic**
5.	**Uses**	**Gastric ulcer, leprosy, severe vadha diseases, throbbing pain associated diseases, venereal diseases, bubo in the groins occurs to the females and males, various types of eye diseases.**
6.	**Toxicity symptoms**	**Sweeling in Mouth to GIT, Drooping of saliava, Dysphagia.**

ILUPAI NEI (OIL OF *MADHUGA LONGIFOLIA*):

இலுப்பை நெய் பொதுகுணம்

“கரப்பா னடருங் கடிசிரங்கு புண்ணும்
உரப்பா மிடப்புவலி யோடுங்-கரப்பான்
பாகுமொழி மாதே! பலமுண்டாந் துற்பலம்
ஏதகுமி லுப்பையி னெய்க் கே[41].”

GENERAL PROPERTIES OF ILUPAI NEI

KINGDOM	**Plantae**
DIVISION	**Angiosperms**
CLASS	**Eudicots**
SUB CLASS	**Asterids**
ORDER	**Ericales**
FAMILY	**Sapotaceae**
GENUS	***Madhuca***
SPECIES	***M. longifolia***
BOTANICALNAME	***Madhuga longifolia***
ENGLISH NAME	**South Indian mahua**
PARTS USED	**Oil**
CHEMICAL CONSTITUENT	**madhucic acid (penta cyclic triterpenoids), madhushazone, oleanane type triterpene glycosides and madhucosides A and B, Sapogenin, triterpenoids, steroids, saponin, flavonoids and glycosides**
ACTION	**Anthelmintic, Anti pyritic.**
SUVAI-THANMAI-PIRIVU	**thuvarppu– thatpam – Karppu**
USES	**Oil used as Emollient, Skin Disease, Rheumatism, Headache, laxative, Piles, Hemorrhoids, Emetics, Anti Earth worm..**

POTRALAI KAYANTHAGARAI (*ECLIPTA PROSTRATA*):

திருவுண்டாம் ஞானத் தெளிவுண்டா மேலை
யருவுண்டா முள்ளதெல்லா முண்டாங் குருவுண்டாம்
பொன்னாகத் தன்னாகம் பொற்றலைக்கை யாந்தகரைத்
தன்னாகத் தின்றாகத் தான்[41]

தேரன் வெண்பா

KINGDOM	**Plantae**
DIVISION	**Angiosperms**
CLASS	**Eudicots**
SUB CLASS	**Asterids**
ORDER	**Asterides**
FAMILY	**Asteraceae**
GENUS	**Eclipta**
SPECIES	**E. prostrate**
BOTANICALNAME	***Eclipta prostrata***
ENGLISH NAME	**Trailing eclipta**
PARTS USED	**Hole plant**
CHEMICAL CONSTITUENT	**madhucic acid (penta cyclic triterpenoids), madhushazone, oleanane type triterpene glycosides and madhucosides A and B, Sapogenin, triterpenoids, steroids, saponin, flavonoids and glycosides**
ACTION	**Cholagogue, Tonic, Alterative, Ement, Purgative, Deobstruent, Hepictonic.**
SUVAI-THANMAI-PIRIVU	**Thuvarppu– Vetpam – Karppu**
USES	**Eye disease, ulcer.**

DRUG REVIEW OF SIDDHA ASPECT

EXTERNAL MEDICINE: MOOLAYOGA NIRKUNDI THAILAM

INGREDIENTS[23]

GROUP I

Vennochi *(Vitex negundo)*

Amanukku *(Ricinus communis)*

Erukku (*Calotropis gigantea)*

Amukkura *(Withania sominifera)*

Pungu (*Butea frodosa)*

Paruvagai (*Mimosa sirissa*)

Athondai (*Capparis zelanica*)

Peramutty *(Pavonia odorata*)

Punarmurugai *(butea monosperma*)

Kuthiraivali (*Echinochloa frumentacea)*

Ailamaram (*Chukrasia tabulais*)

GROUP II

Thevatharu (*cedrus deodara*)

Sukku (*zingiber officinale*)

Ulunthu (*vigna munga*)

Mavilinga pattai (*Crateava mangna*)

Kunkiliyam (*vatria indica)*

Sithiramulam (*plumbago indica)*

VENNOCHI *(VITEX NEGUNDO):*

"நோயா கலியை நொடிக்கு ளருந்தவெம்மை
யோயா மணாளு முயர்த்துதலுக்- காய
வந்தமுதல் நண்பாகி வாதத்தை யேயுற்வாற்
சிந்துவா ரங்கனலுந் தீ"[42]

GENERAL PROPERTIES:

KINGDOM	**Plantae**
DIVISION	**Angiosperms**
CLASS	**Eudicots**
SUB CLASS	**Asteroids**
ORDER	**Lamiales**
FAMILY	**Lamiaceae**
GENUS	**Vitex**
SPECIES	**V . negundo**
BOTANICALNAME	***Vitex negundo***
ENGLISH NAME	**Five leafs chaste tree**
PARTS USED	**Root**
CHEMICAL CONSTITUENT	**Casticin, Isoorientin, Chrysophenol D, Luteolin, P–hydroxybenzoic acid and D-fructose.**
ACTION	**Febrifuge ,Expectorant, Diuretic.**
SUVAI-THANMAI-PIRIVU	**Kaippu, Thuvarppu – Veppam – Karppu**
USES	**Roots and leaves are used in eczema, ringworm and other skin diseases, liver disorders,spleen enlargement, rheumatic pain, gout, abscess, backache.**

AMANUKKU *(RICINUS COMMUNIS):*

GENERAL PROPERTIES:

KINGDOM	**Plantae**
DIVISION	**Angiosperms**
CLASS	**Eudicots**
SUB CLASS	**Rosids**
ORDER	**Malpighiales**
FAMILY	**Euphorbiaceae**
GENUS	**Ricinus**
SPECIES	**R .communis**
BOTANICALNAME	***Ricinus communis***
ENGLISH NAME	**Castor –oil plant**
PARTS USED	**Root**
CHEMICAL CONSTITUENT	**Ricinine, Quercetin 3-O- β-rutinoside (rutin), Terpenoids, Tocopherol**
ACTION	**Antivatha, Analgesic , Anti-inflammatory.**
SUVAI-THANMAI-PIRIVU	**Kaippu – Veppam – Karppu**
USES	**Skin diseases, Dysponea, Hydrocele, Flatulance, Piles, Cough, Head ache, Leprosy, Arthrities, Calculus, Dysuria, Fever, Swelling, Mental diseases, Painful Micturation.**

ERUKKU (*CALOTROPIS GIGANTEA) :*

GENERAL PROPERTIES:

KINGDOM	**Plantae**
DIVISION	**Angiosperms**
CLASS	**Eudicots**
SUB CLASS	**Asteroids**
ORDER	**Gentianales**
FAMILY	**Apocynaceae**
GENUS	**Calotropis**
SPECIES	**C. gigantean**
BOTANICALNAME	***Calotropis gigantea***
ENGLISH NAME	**Gigantic swallow wort**
PARTS USED	**Root**
CHEMICAL CONSTITUENT	**Calotoxin, Calactin, Uscharin.**
ACTION	**Anthelmentic, Alterative, Laxative, Stimulant.**
SUVAI-THANMAI-PIRIVU	**Kaippu, Karam, Mathuram – Veppam – Karppu**
USES	**Useful in cough, cold and constipation**.

AMUKKURA *(WITHANIA SOMINIFERA):*

“கொஞ்சத் துவர்ப்பாங் கொடியகயம் சூலையரி

மிஞ்சுகரப் பான்பாண்டு வெப்பதப்பு- விஞ்சி

முசுவுறு தோடமும்போ மோகம்அன லுண்டாம்

அசுவகந் திக்கென் றறி[44]”

GENERAL PROPERTIES:

KINGDOM	**Plantae**
DIVISION	**Angiosperms**
CLASS	**Eudicots**
SUB CLASS	**Asterids**
ORDER	**Solanales**
FAMILY	**Solanaceae**
GENUS	**Withania**
SPECIES	**W. somnifera**
BOTANICALNAME	***Withinia somnifera***
ENGLISH NAME	**Winter cherry**
PARTS USED	**Root**
CHEMICAL CONSTITUENT	**Withanolides**,**Somniferine, Perinponyine**
ACTION	**Febrifuge, Diuretic, Alterative, Aphrodisiac, Deobsturent.**
SUVAI-THANMAI-PIRIVU	**Kaippu, Karam, Mathuram – Veppam – Karppu**
USES	**Ashwagandha is applied to the skin for treating wounds, backache, and one-sided paralysis (hemiplegia).**

PUNGU (*BUTEA FRODOSA):*

KINGDOM	**Plantae**
DIVISION	**Angiosperms**
CLASS	**Eudicots**
SUB CLASS	**Rosids**
ORDER	**Fabales**
FAMILY	**Fabaceae**
GENUS	**Butea**
SPECIES	**B. frodosa**
BOTANICALNAME	***Butea frodosa***
ENGLISH NAME	**Winter cherry**
PARTS USED	**Root**
ACTION	**Febrifuge, Diuretic, Alterative, Aphrodisiac,Deobsturent.**
SUVAI-THANMAI-PIRIVU	**Kaippu, Karam, Mathuram – Veppam – Karppu**

PARUVAGAI (*MIMOSA SIRISSA*):

KINGDOM	**Plantae**
DIVISION	**Angiosperms**
CLASS	**Eudicots**
SUB CLASS	**Rosids**
ORDER	**Fabales**
FAMILY	**Fabaceae**
GENUS	**Albisia**
SPECIES	**B. lebbeck**
BOTANICALNAME	***Mimosa sirissa***
ENGLISH NAME	**Winter cherry**
PARTS USED	**Root**
ACTION	**Astringent, Refrigerant**
SUVAI-THANMAI-PIRIVU	**Kaippu, Karam, Mathuram – Veppam – Karppu**

ATHONDAI (*CAPPARIS ZELANICA*):

KINGDOM	**Plantae**
DIVISION	**Angiosperms**
CLASS	**Eudicots**
SUB CLASS	**Rosids**
ORDER	**Brassicales**
FAMILY	**Capparaceae**
GENUS	**Capparis**
SPECIES	**c.zeylanica**
BOTANICALNAME	***Capparis zeylanica***
PARTS USED	**Root**
CHEMICAL CONSTITUENT	**Thioglucosides, Glucocapparin, N-tricontane, α-and β-amyrin, Alkaloid, a phytosterol, a Mucilaginous substance and a water-soluble acid, capric acid. The seeds contain fixed oilthioglucosides, glucocapparin, n-tricontane, α-and β-amyrin, an alkaloid, a phytosterol, a mucilaginous substance and a water-soluble acid, capric acid. The seeds contain fixed oil**
ACTION	**Sedative, Stomachic.**
SUVAI-THANMAI-PIRIVU	**Kaippu – Veppam – Karppu**
USES	Root bark is sedative, cooling, cholagogue, stomachic and antihidrotic; along with spirit given in cholera.Root bark is sedative, cooling, cholagogue, stomachic and antihidrotic; along with spirit given in cholera.

PERAMUTTY *(PAVONIA ODORATA)*:

KINGDOM	**Plantae**
DIVISION	**Angiosperms**
CLASS	**Eudicots**
SUB CLASS	**Rosids**
ORDER	**Malvales**
FAMILY	**Malvaceae**
GENUS	**Pavoni**
SPECIES	**P . odorata**
BOTANICALNAME	**Pavonia odorata**
PARTS USED	**Root**
ACTION	**Cooling, Carminative, Diuretic, Diaphoretic**
SUVAI-THANMAI-PIRIVU	**Thuvarppu – Veppam – Karppu**

KUTHIRAIVALI (*ECHINOCHLOA FRUMENTACEA*):

KINGDOM	**Plantae**
DIVISION	**Angiosperms**
CLASS	**Monocots**
SUB CLASS	**Commelinids**
ORDER	**Poalea**
FAMILY	**Poaceae**
GENUS	**Echinochloa**
SPECIES	**E . frumentacea**
BOTANICALNAME	*Echinochloa frumentacea*
PARTS USED	**Seeds**
USES	The plant is useful in the treatment of biliousness and constipation

AILAMARAM (*CHUKRASIA TABULAIS*) :

KINGDOM	**Plantae**
DIVISION	**Angiosperms**
CLASS	**Eudicots**
SUB CLASS	**Rosids**
ORDER	**Sapindales**
FAMILY	**Mekiaceae**
GENUS	**Chukrasia**
SPECIES	**c.tubulais**
BOTANICALNAME	*Chukrasia tabulais*
PARTS USED	**Root**
CHEMICAL CONSTITUENT	**contains sitosterol, melianone, scopoletin, 6,7-dimethoxycoumarin, tetranorterpenes and tabularin.**
ACTION	**Counter irritant, febrifuge.**
SUVAI-THANMAI-PIRIVU	**Kaippu – Veppam – Karppu**
USES	**An extract of the bark has powerful astringent properties and has been used to treat diarrhoea and as a febrifuge**

THEVATHARU (*CEDRUS DEODARA*):

KINGDOM	**Plantae**
DIVISION	**Pinophyta**
CLASS	**Pinopsida**
ORDER	**Pinales**
FAMILY	**Pinzceae**
GENUS	**Cedrus**
SPECIES	**C . deodara**
BOTANICALNAME	*Cedrus deodara*
PARTS USED	**bark**
CHEMICAL CONSTITUENT	**contains cedeodarin (6methyltaxifolin), dihydromyricetin (ampelopsin), cedrin (6methyldihydromyricetin), cedrinoside[17] and deodarin**
ACTION	**Astringent, febrifuge.**
SUVAI-THANMAI-PIRIVU	**Thuvarpu, Kaippu – Veppam – Karppu**
USES	**An extract of the bark has powerful astringent properties and has been used to treat diarrhoea and as a febrifuge**

SUKKU (*ZINGIBER OFFICINALE*):

KINGDOM	**Plantae**
DIVISION	**Angiosperms**
CLASS	**Monocots**
SUB CLASS	**Commelinids**
ORDER	**Zingiberales**
FAMILY	**Zingiberaceae**
GENUS	**Zingiber**
SPECIES	**Z . offcinale**
BOTANICALNAME	**Zingiber officinale**
PARTS USED	**Root**
CHEMICAL CONSTITUENT	**zingerone, shogaols and gingerols with [6]-gingerol(1-[4'-hydroxy-3'-methoxyphenyl]-5-hydroxy-3-decanone**
ACTION	**Stimulant, Stomachic,Carminative.**
SUVAI-THANMAI-PIRIVU	**Karpu – Veppam – Karppu**
USES	**Nausea or pain associated with various ailments. Side effects, mostly associated with consuming powdered ginger, are gas, bloating, heartburn, and nausea.**

ULUNTHU (*VIGNA MUNGA*):

KINGDOM	**Plantae**
DIVISION	**Angiosperms**
CLASS	**Eudicots**
SUB CLASS	**Rosids**
ORDER	**Fabales**
FAMILY	**Fabaceae**
GENUS	**Vigna**
SPECIES	**Vigna mungo**
BOTANICALNAME	**Vigna mungo**
PARTS USED	**Seeds**
ACTION	**Stimulant, Stomachic,Carminative.**
SUVAI-THANMAI-PIRIVU	**Inipu – Veppam – Karppu**
USES	**Anti inflammatory properties, Nervous system disorders, Disorders of digestive system:**

MAVILINGA PATTAI (*CRATEAVA MANGNA*):

KINGDOM	**Plantae**
DIVISION	**Angiosperms**
CLASS	**Eudicots**
SUB CLASS	**Rosids**
ORDER	**Brassicales**
FAMILY	**Capparaceae**
GENUS	**Crateva**
SPECIES	**C .mugna**
BOTANICALNAME	**Crateva magna**
PARTS USED	**Bark**
ACTION	**Rubefacient, laxative,lithontriptic.**
SUVAI-THANMAI-PIRIVU	**Kaipu – Veppam – Karppu**
USES	**The decoction of bark is internally administered to cure diseases like renal calculi, dysuria, helminthiasis, inflammations and abscesses**

KUNKILIYAM (*VATRIA INDICA*):

KINGDOM	**Plantae**
DIVISION	**Angiosperms**
CLASS	**Eudicots**
SUB CLASS	**Rosids**
ORDER	**Malvales**
FAMILY	**Dipterocaraceae**
GENUS	**Varteria**
SPECIES	**V .indica**
BOTANICALNAME	**Vateria indica**
PARTS USED	**Resin**
ACTION	**Rubefacient, laxative,lithontriptic.**
SUVAI-THANMAI-PIRIVU	**Kaipu – Veppam – Karppu**
USES	**Used in treatment of gout, parkinson's disease, neck stiffness, locked jaw, paralysis, thigh cramps, etc**

SITHIRAMULAM (*PLUMBAGO INDICA*):

KINGDOM	**Plantae**
DIVISION	**Angiosperms**
CLASS	**Eudicots**
SUB CLASS	**Core eudicots**
ORDER	**Caryophyllales**
FAMILY	**Plumbaginacese**
GENUS	**Plimbago**
SPECIES	**P , indica**
BOTANICALNAME	**Plumbago indica**
PARTS USED	**Root**
ACTION	**Cathartic , Anthelmintic .**
SUVAI-THANMAI-PIRIVU	**Siru Kaipu – Veppam – Karppu**
USES	**it is useful for the treatment of chronic respiratory problems, bronchitis and rheumatism.**

VARMAM REVIEW

வர்மம் "வன்மம்" (வர்ம விதி) என்ற சொல்லிலிருந்து பிறந்ததாகும். வன்மம் என்ற சொல்லின் மூலவார்த்தையான "வன்மை" என்ற சொல்லுக்கு வலிமை (strength), கடினம் (harden), திறமை (skill) என்ற பல அர்த்தங்கள் உண்டு. பொதுவாக வர்மம் என்றால் மனித உடலிலுள்ள ஆபத்தான இரகசிய பகுதிகளாகும்[28].

வர்மப்புள்ளிகளின் ஐந்துவித செயல்கள்

1. உயிரைப் போக்கும்
2. உயிரைக் காக்கும்
3. நோயை சேர்க்கும்
4. நோயை நீக்கும்
5. ஆயுளைப் பெருக்கும்

"உள்ளபடி நூற்றெட்டு தலம் சாவாகும்
உணர்வாகி அத்தலங்கள் உயிரு மாகும்
கள்ளமுற்ற அத்தலங்கள் பிணியு மாகும்
களங்கமற்றால் அத்தலங்கள் சுகமே காணும்
உள்ளுணர்வாய் அத்தலங்கள் வாசி யேற்ற
உற்றதினால் அத்தலங்கள் உறுதி சேரும்
புள்ளடிபோல் அத்தலங்கள் கண்ட வர்கள்
புகலார்கள் எல்லோரும் புவியினுள் ளோர்க்கே."

-Varma Odivu Murivu Sara Soothiram-*1200*

வாசி எனும் உயிர் ஆற்றல் உடலில் குறிப்பிட்ட இடங்கள் பலவற்றில் நிலைகொண்டுள்ளது. அது ஓர் ஓட்டத்தை மேற்கொள்ளும் போது சரம் எனப்படுகிறது .அது நிலை கொண்டுள்ள நிலையங்கள் மருத்துவரால் தூண்டப்பட்டு சர ஓட்டம் சீர் குலைந்து நோயாக மாறுவதும் அந்த நிலையங்கள் மருத்துவரால் தூண்டப்பட்டு சர ஓட்டம் சீர்படுத்தப்பட்டு குணமாவதுமாகிய இரு செயல்களும் வர்மம் எனப்படும்.

Varmam are vital points in the body that act as energy transformers or batteries. They form centres for boosting the vital life-force Uyir Sakthi flow through the intricate nadi system of the body. Nature, by its design, has protected these vital centres by placing them deep inside the body or by covering them with tissues inaccessible to normal attempts of breach.

Varmam is a holistic therapy on its own and tackles the body, mind and spirit. A varmam expert understands the underlying links between the body, vital life-force and the mind.

SITE OF VARMA:

Varmam can be defined as the flow of life force in relationship with breathing.

"இப்படிச் சொல்லுகின்ற விவ்வகை வன்மந்தானும்
மெய்ப்படி அமுக்கிப்பார்த்தால் மிகவும்நொந் திருக்கில்வன்மம்
செப்புறு தசைகளென்பு சிறு பெரு நரம்புசந்து
தப்புறு நாடியாறும் தங்குமிடம் வன்மமாமே[46]."

- *Varma Vidhi*

The vital points (varmams) are located in the junction of nerves, joints, bones, muscles, ligaments and internal organs.

காணுகின்ற கேசாதி பாதமெங் கும்
கதித்தோடும் வாசிநிலை வர்ம மாச்சே[47]

-வாகட நிதானம்

"வாசி இயங்கும் மிடமெங்கும் பலவர்மங் களே[48]"

-வர்ம ஓடிவு முறிவு சரசூத்திரம்

The points where life force resides and flows in the human body are known as varmam. It also means the points where breathing energy resides in the body.

"வாசி தட்டும் தலமெல்லாம் வர்மம்[49]."

- வர்ம ஓடிவு முறிவு சரசூத்திரம்

OTHER NAME OF VARMA*:*

"மர்மமென்றும் வாசியென்றும் புரவியென்றும்
காற்றென்றும் உயிரென்றும் மாய்கை
பிராணன் என்றும் கலை என்றும் பரமென்றும்
சரமென்றும் யொகம் என்றும் பரமென்றும்
சிவமென்றும் இதையெல்லாம் வர்மம் என்றும் சொல்லலாகும்"

-வாகட நிதானம் 350 பா.30

1. VANMAM
2. KALAM
3. ADAKKAM
4. SUTSAMAM
5. MARMAM
6. EMAM
7. EEDU
8. AMIRTHA NILAI
9. VAASITHANAM
10. SARAM

History of Varmam:

"தேறவே சிவன் உமைக்குச் சொன்ன போதம்

ஆறாமல் நான் அறிந்து இந்நூல் சொன்னேன்."

- Varma Odivu Murivu Sara Soothiram-1500, Song-833

Varmam kalai to the god Shiva who is said to have taught it to his wife Paarvathi later Paarvathi taught Varmam to their son Murugan. While disguised as an old man, Murugan passed the knowledge of *varmam* to the sage Agastya who then recorded it and disseminated the skill among his students. Siddha medicine is also attributed to Agastya.

"பண்பாக அகத்தியனார் ராமதேவர்
பணிவாக போகமுனிவர் தானும்
பருவமாய் மனிதர்கள் பிழைக்கவென்று
பாங்காகச் சொன்னதொரு நூல்கள் கண்டு
பார்த்திடவே சுருக்கமாய் பிறித்துச் சொன்னேன்."

-Kai Maathirai Thiravukoll

Varmam has grown under three independent schools of thoughts, mainly governed by three ancient siddhar's namely Akasthianyar, Bohar and Rama Devar. The term Varmam appears in the Rigveda where Indran hits Vritran in a Varmam with his vajram.

All the poems in the suvadi are in tamil language. Sangam poets inaugurated many books at pothigai malai. Among them, varma patakotthu was the first and basic text for varamam.it was inagurated during the sangam periods. Tamil medicine had many divisions and one among them is varamam.

Aetiology of Varma:

கேளப்பா தடியடிகள் படுத லாலும்
கெடியான எறிவிசைகள் கொள்ள லாலும்
வாளப்பா கட்டைகுற்றி தட்ட லாலும்
மாற்றானின் கைப்பிடிகள் படுதலாலும்
வேளப்பா ஆகசா மதிலே நின்று
மெய்மறந்து கைமறந்து விழுத லாலும்
தாளப்பா பற்பலவாம் விதத்தி னாலே
சங்கையில்லாக் காலமது சாருந் தானே.

- Hit sustained by a thick and rough stick.
- Stone thrown at a high speed from a sling.
- Fall from a tree or height.
- Fall while running.
- By leaping.
- By fainting

CLASSIFICATION OF VARMAM[24]:

1. Based on varma kannadi

Human body is divided into five areas in which varmam.

S.No	Area	Number of points
1.	From top of the head till neck	25
2.	From Neck till naval point	45
3.	From Naval point till Anus	9
4.	Both hands	14
5.	Both leg	15
	TOTAL	**108**

2. Based on Varma Odivu Murivu Soothiram

The same 108 varmams are classified under different categories. One such classification is based on 12 nerves (or a meridian channel) in the nervous system. Each meridian channel consists of one Padu varmam and eight Thodu varmam.

Varmam Type	Number of Points
Thodu Varmam	96
Padu Varmam	12
Total	108

3. Based on the text Naramparai

written by Kumbamuni Siddha, there are 253 varmams:

Classification	Number of Points
Padu Varman	18
Thodu Varmam	96
Pakka Varmam	8
Narambu Elumbu Varmam	86
Maru Varmam	45
Total	**253**

4. Based on the text Varma Soothiram:

Classification	Number of Points
Vatha Varmam	64
Pitta Varmam	24
Kapha Varmam	06
Ul varmam	06
Thattu varmam	08
Total	**108**

5. Based on yet another classification:

There are 107 points:

Classification	Number of Points
Vata Varmam	65
Pitta Varmam	24
Kapha Varmam	6
Concealed Varmam	12
Total	**107**

Varmam treatment

Varmam therapy is a systematic study of vital points (varmam) on human body and also on animal bodies.

Varma therapy can be used for Low back ache, Spinal problems, Head ache and Migraine, Arthritis, Frozen shoulder, Neuromuscular problems. It is a safe and effective system of healing and for rejuvenation. It provides a complete natural healing to rejuvenate the toxic imbalances.

In this present study, 60 cases of Thandagavatham were diagnosed clinically and 40 cases of them were treated by Varmam treatment along with the trial drugs.

The following Varmam points used for low backache**:**

- Nanganapootu Varmam
- Naivari adangal
- Kaal mannai
- Komberi Kaalam
- Perunarambu adangal
- Ullankaal vellai

NANGANA POOTTU (NAAIRUPPU VARMAM)

Synonyms –

Sorutheenda Varmam, Nattalu Varmam

Naairuppu Varmam- Varma Aani

Putti Varmam - Sathura Mani Soothiram

Location: ங்ங்ஙனா பூட்டு வர்மம்:

i.Kumbamuni narambarai 108

....."மூலத்தில் நின்று புஷ்டம் என்ற
நாங்ஙன பொருத்தே சுற்றிடுமாம் நட்டெலும்பு
இருவசமும் கைபாகம் அரிந்து செய்யே
ஆர்அறிவார் அருமைதானே !

ii.Varma Aani -108

"இருப்பு வர்மத்துக்கு இருகால் வில் பொருத்தில் நாயிருப்புகாலம்."

iii.*Sathura Mani Soothiram*

"பூணவே நால்விரல் மேல் பத்தாயவர்மம்
பொருந்திய மூவிரல் மேலே புட்டி வர்மம்."

Sacral groove or 3 fingers from the lumbosacral joint

Site: Sacroiliac articulation situated in the region of sacrum on both sides of spinal column.

Procedure: Give a pressure with palmar aspect of hands on both sides of sacroiliac joints.

Indication: Lumbar spine related diseases.

Uses: Strengthen the lower limbs

KOMBERI VARMAM

Synonyms:

Thumbikaala Varmam - Varma Noolavu Nool

Komberi Varmam - Varma Soothiram

Location:

Komberi varmam is located 5 fingers below from the Kuthirai Mugha Varmam point (the middle of the both legs) in the anterior aspect of both legs.

"குதிரைமுக வர்மத்திலிருந்து (5 விரலுக்கு) கீழ்நோக்கி
அளக்க தும்பிக்கால வர்மம் அறியலாம்."

-Varma Noolalavu Nool

".....குதிரை முகவர்மம்
கண்டாயே அங்குலந்தான் நாலின் கீழே
கடந்திட்டால் கொம்பேறி வர்மமாகும்."

"ஏகும் முடவு இறைரண்டில் தும்பிகாலம்."

-Adi Varma Sootcham-500

"காலிலே குதிரைமுகக் காலத்தின் கீழ் அங்குலம்

நாலிலே நவிலுவோம் கொம்பெறி வர்மத்தின் தானம்."

-Varma Laada Soothiram-300

Sign and symptoms:

Damage to Komberi Varmam leads to sweating, features mimicking tetanus and tiredness will set in.

ULLANKAAL VELLAI VARMAM

Synonyms

Adangal Varmam - Varma Soothiram 1200

Kaal vellai Varmam - Adivarma Sootcham 500

Allankaal Varmam - Varma Viralalavu Nool

Adikkuzhi Varmam - Varma Vidhi

Vellai Varmam - Varma Odivu Murivu Sara Soothiram

Location: In the centre of the plantar region.

"கீர்த்தியாம் பாதமதில் வெள்ளை வர்மம்."

- Varma Odivu Murivu Sara Soothiram -1200

"சூட்சமடா வெள்ளையதில் அடங்கல் வர்மம்."

- Varma Soothiram- 101

"படைமுறித்தான் வர்மத்துக்கு இரண்டு விரலுக்குக்

கீழே உள்ளங்கால் வர்மம் .....

-Varma Noolalavu Nool

"அவனிதனில் உள்ளங்கால் வெள்ளை வர்மம்."

- Varma Peerangi-100

"அகமான உள்ளம் கால் வெள்ளை வர்மம்."

-Adi Varma Sootcham-500

Symptoms:

Fainting then death occurs.

Retrieval techniques:

Massaging with medicated oil and taking head bath with oil cures eye diseases.

Uses:

It cures giddiness, vomiting, faint, hysteria, convulsions and delirium.

4. MATERIALS AND METHODS

An open comparative clinical study on "**THANDAGA VATHAM** (Lumbar Spondylosis)".with the evaluation of trial drug **NAGA CHENDHURAM" (INT) "MOOLAYOGA NIRKUNDI THAILAM" (EXT) AND "VARMAM THERAPY".**

Study phase	Phase II
Methodology	Open comparative clinical trial
Study Duration	12 months
Study Center	Arignar Anna Government Hospital, Government Siddha Medical College, Chennai

INTERVENTIONS:

"NAGA CHENDHURAM" (INT)

"MOOLAYOGA NIRKUNDI THAILAM" (EXT)

"VARMAM THERAPY"

INTERNAL DRUG : NAGA CHENDHURAM

REFERENCE : ATHMA RAKSHAMIRTHA " page no.301

EXTERNAL : MOOLAYOGA NIRKUNDI THAILAM

REFERENCE : THERAYAR THAILAVARKA SURUKAM

Page No.201

EXTERNAL THERAPY : VARMAM THERAPY

REFERENCE : SIRAPPU MARUTHUVAM

VARMA 100

KUMBAMUNI NARAMBARAI 108

VARMA PADA SUTHIRAM 300

SOURCE OF RAW DRUGS:

The required raw drugs for the trial medicines will be purchased from a well reputed country raw drug shop and drugs will be authenticated. Then the raw drugs will be purified separately then the trial drugs will be prepared in Gunapadam Laboratory of Arignar Anna Government Hospital , Government Siddha Medical College .

4.1 INTERNAL DRUG – NAGA CHENDURUM

INGREDIENTS:

Nagam (Zinc)	**- 35g**
Manosilai(*Red* Orpiment)	**- each 35 g**
Soodham(Mercury)	
Veeram (Hydrargyrum per chloride)	
Gandhagam (Sulphur)	**- 70 g**

Ilupai nei (Oil of *Madhuga longifolia)*	**- Q.S**
Venkolinchi ver **(***Baptisia bracfeata*)	
Potralai kayanthagarai **(***Eclipta prostrata*)	

4.1 METHOD OF PURIFICATION[63]:

Nagam (zinc):

Nagam (zinc) is melted and poured in the oil of Madhuga longifolia (illupai nei). Repeat this for 10 times. Now zinc is get purified (fig 4.1.1)

METHOD OF PURIFICATION[22]

NAGAM PURIFICATION


Fig 4.1.1

RASAM PURIFICATION



Fig 4.1.2

GANDHAGAM PURIFICATION:

Fig 4.1.3

MANOSILAI PURIFICATION

Fig 4.1.4

VEERAM PURIFICATION

Fig 4.1.5

Rasam (Mercury):

35 grms of Mercury is triturated with brick powder and turmeric powder for one hour respectively and washed with water. Then the Mercury is boiled with the juice of Kuppai maeni (1.3 litters) until it is detoxified (fig 4.1.2)

Gandhagam (Sulphur):

Sulphur is placed in an iron spoon. A small quantity of cow's butter is added and the spoon is heated till the butter melts; this mixture is immersed in inclined position in cow's milk. This procedure is repeated for 30 times to get purified Sulphur. Each time, fresh milk is to be used.fig (4.1.3)

Manosilai (Red Orpiment):

Manosilai buried in limestone and poured by donkey urine to get purified. (Fig 4.1.4)

Veeram (Mercury per Chloride):

Camphor is mixed with tender coconut water and placed in a mud pot. Veeram is tied in a cloth and soaked in the pot without touching the water and the pot is burnt out for half an hour Then Veeram is taken out and washed. (Fig 4.1.5)

4.2 STANDARD OPERATING PROCEDURE OF NAGA CHENDHURAM

Nagam (zinc) is melted and poured in the oil of Madhuga Longifolia (Illupai Nei). Repeat this for 10 times. Now zinc is get purified , This purified Nagam (zinc) is placed inside the gugai and it is melted with the ulai. Here manosilai (Red orpiment) powder is added and stirred with the help of venkozhinji root (Baptisia bracfeata),then the whole content is turned into parpam .This prepared Parpam, Soodham (mercury), Veeram (Hydragram per chloride) are placed in stone mortar and grinded with milk for 4 samam(12 hours).Then sulphur is added and grinded well with Potralai Karippan (eclipta prostrata) and bring into incineration process with 10 cow dung cakes. Repeat this incineration process for 6 more times. Finally it will turn into Chendurum.

DOSAGE **:** 130 mg.Twice a day for 48 days

ADJUVANT **:** HONEY

INDICATION **: vathadiseases**, kasam, valli kunmam erikunmam, kalleeralkatti, pun, soolai, krani, megham, edappattuerral noi manjal noi, kaichal,kulir, mandhara kasam.

4.3 EXTERNAL MOOLAYOGA NIRKUNDI THAILAM

GROUP I

1. Vennochi *(Vitex negundo)*
2. Amanukku *(Ricinus communis)*
3. Erukku (*Calotropis gigantea)*
4. Amukkura *(Withania sominifera)*
5. Pungu (*Butea frodosa)*
6. Paruvagai (*Mimosa sirissa*)
7. Athondai (*Capparis zelanica*)
8. Peramutty *(Pavonia odorata*)
9. Punarmurugai *(butea monosperma*)
10. Kuthiraivali (*Echinochloa frumentacea)*
11. Ailamaram (*Chukrasia tabulais*)

- EACH 35 g

GROUP II

12. Thevatharu (*cedrus deodara*)
13. Sukku (*Zingiber officinale*)
14. Ulunthu (V*igna munga*)
15. Mavilinga pattai (*Crateava mangna*)
16. Kunkiliyam (*Vatria indica)*
17. Sithiramulam (*Plumbago indica)*

-EACH 17g

18. Water - 5.2 ltrs

Fig : 4.3.1

PREPARATION

Take group I drugs and put into the vessel. Add water to the vessel and heated to get decoction. Then mix gingelly oil and goat milk to it. Finally the group II drugs grinded with above decoction is added and heated well until it turns into wax consistency. **(**Fig : 4.3.1)

INDICATIONS: vatha disease

DRUG STORAGE:

The trial drug is stored in clean air tight glass container and it is dispensed to the patients.

DISPENSING:

The chendhuram is given in the butter paper. External oil is given in pet bottles.

4.4 STANDARDIZATION OF DRUG:

4.4.1 Traditional way of testing Chendhuram

1. Colour:

Red in colour without any shiny appearance

2. Taste and odour:

Tasteless and odourless

3. Luster

Did not regain luster on heating again at same temperature

4. Floating on water

Sample floats on water. Did not immediately immersed in water

5. Finger furrows test.

Impinged in the papillary ridges when the sample rubbed in between Index finger and thum

4.4.2 PHYSICO CHEMICAL ANALYSIS

Determination of Total Ash:

Incinerate 2 g accurately weighed, of the drug in a tared silica dish at 450ºC until free from carbon, cool and weigh. If a carbon free ash cannot be obtained in this way, exhaust the charred mass with hot water, collect the residue on an ash less filter paper, incinerate the residue and filter paper, add the filtrate, evaporate to dryness, and ignite at a temperature not exceeding 450ºC. Calculate the percentage of ash with reference to the air-dried drug.

Determination of Acid Water Soluble Ash:

Boil the ash obtained in the above test for 5 minutes with 25 ml of distilled water repeatedly; collect the insoluble matter on an ash less filter paper, and ignite to constant weight. Calculate the percentage of water soluble ash with reference to the air dried drug.

Determination of Acid Insoluble Ash:

Boil the ash obtained in the above test for 5 minutes with 25 ml of dilute hydrochloric acid repeatedly; collect the insoluble matter on an ash less filter paper, wash with hot water and ignite to constant weight. Calculate the percentage of acid-insoluble ash with reference to the air dried drug.

Determination of Loss on Drying:

Place about 10 g of drug (without preliminary drying) after accurately weighing (accurately weighed to within 0.01 g) it in a tared evaporating dish. After placing the above said amount of the drug in the tared evaporating dish dry at 105º for 5 hours, and weigh. Continue the drying and weighing at one hour interval until difference between two successive weighings corresponds to not more than 0.25 per cent. Constant weight is reached when two consecutive weighings after drying for 30 minutes and cooling for 30 minutes in a desiccator, show not more than 0.01 g difference.

Determination of pH:

Take 10 g of sample, add 100 ml of distilled water, stir well and filter. Use the filtrate for the experiment. Switch on the instrument. Give 30 minutes time for warming pH meter. Introduce the pH 4 solution first and adjust the pH meter by using the knob to 4.00 for room temperature 20°C, 4.01 for room temperature 25°C, 4.02 for room temperature 30°C. Introduce the pH 7 solution and adjust the pH meter to 7 by using the knob. Introduce the pH 9.2 solution and check the pH reading without adjusting the knob. Then introduce the sample solution and note the reading. Repeat the test four times and take the average reading as resul

4.4.3 HEAVY METAL ANALYSIS

Heavy metal	Procedure	Observation
Mercury	1.Add 5ml of hydrochloric acid to little substance, precipitate appears 2.Then boil the precipitate with water. It does not dissolves add sodium hydroxide solution .heat it and filter	No Black precipitaion appears
Lead	1.add 2ml of potassium chormate to salt solution.	No yellow precipitate appears
Arsenic	To 10 drops of solution. Add 6ml NH_3 until neutral.make the solution acidic b adding one or more drops of 6 M HCL. Add 1 ml of thioacetamide and stir well. Heat the test tube in the boiling water bath for 5 minutes	No red orange precipitate Or Yellow or brown precipitates appears
Cadmiam	add 2ml of solution, add 1 ml NaOH, add 1ml of distal water and add 1 ml of Hcl	No Yellow precipitates appears
Chromium	To 10 drops of solution, add 1ml of 3% H_2O_2 then add 6M NaOH dropwise untill the solution is basic. Heat in a boiling water bathh for a few minutes	No yellow solution of CrO_4^{2} form

4.5 TOXICOLOGICAL STUDY

4.5.1 ACUTE ORAL TOXICITY STUDY OF *NAGA CHENDHURAM* (OECD GUIDELINE – 423)

Introduction:

- The acute toxic class method is a stepwise procedure with the use of 3 animals of a single sex per step.
- Depending on the mortality and/or the moribund status of the animals, on average 2-4 steps may be necessary to allow judgement on the acute toxicity of the test substance.
- This procedure is reproducible, uses very few animals and is able to rank substances in a similar manner to the other acute toxicity testing methods.
- The acute toxic class method is based on biometric evaluations with fixed doses, adequately separated to enable a substance to be ranked for classification purposes and hazard assessment.
- In principle, the method is not intended to allow the calculation of a precise LD50, but does allow for the determination of defined exposure ranges where lethality is expected since death of a proportion of the animals is still the major endpoint of this test.
- The method allows for the determination of an LD50 value only when at least two doses result in mortality higher than 0% and lower than 100%.
- The use of a selection of pre-defined doses, regardless of test substance, with classification explicitly tied to number of animals observed in different states improves the opportunity for laboratory to laboratory reporting consistency and repeatability.

Principle of the Test:

It is the principle of the test that based on a stepwise procedure with the use of a minimum number of animals per step, sufficient information is obtained on the acute toxicity of the test

substance to enable its classification. The substance is administered orally to a group of experimental animals at one of the defined doses. The substance is tested using a stepwise procedure, each step using three animals of a single sex. Absence or presence of compound-related mortality of the animals dosed at one step will determine the next step, i.e.

− no further testing is needed

− dosing of three additional animals, with the same dose

− dosing of three additional animals at the next higher or the next lower dose level. The method will enable a judgment with respect to classifying the test substance to one of a series of toxicity classes.

Methodology:

Selection of Animal Species

The preferred rodent species is the wister rat, although other rodent species may be used. Healthy young adult animals are commonly used laboratory strains should be employed. Females should be nulliparous and non-pregnant. Each animal, at the commencement of its dosing, should be between 6 to 8 weeks old and the weight (150-250gm) should fall in an interval within±20 % of the mean weight of any previously dosed animals.

Housing and Feeding Conditions

The temperature in the experimental animal room should be 22ºC ± 3ºC. Although the relative humidity should be at least 30% and preferably not exceed 70% other than during room cleaning the aim should be 50-60%. Lighting should be artificial, the sequence being 12 hours light, 12 hours dark. For feeding, conventional laboratory diets may be used with an unlimited supply of drinking water. Animals may be group-caged by dose, but the number of animals per cage must not interfere with clear observations of each animal.

Preparation of animals:

The animals are randomly selected, marked to permit individual identification, and kept in their cages for at least 7 days prior to dosing to allow for acclimatization to the laboratory conditions

Test Animals and Test Conditions:

Sexually mature Female Wistar albino rats (150-200gm) were obtained from TANUVAS,Madhavaram, Chennai. All the animals were kept under standard environmental condition (22±3°C). The animals had free access to water and standard pellet diet (Sai meera foods, Bangalore).

Preparation of animals:

The animals are randomly selected, marked to permit individual identification, and kept in their cages for at least 7 days prior to dosing to allow for acclimatization to the laboratory conditions

Preparation for Acute Toxicity Studies

Rats were deprived of food overnight (but not water 16-18 h) prior to administration of the, ***Naga Chendhuram***.

The principles of laboratory animal care were followed and the Institutional Animal Ethical Committee approved the use of the animals and the study design

IAEC approved Number: IAEC/XLVIII/32/CLBMCP/2016

Test Substance	: **NAGA CHENDHURAM**
Animal Source	: TANUVAS,Madhavaram, Chennai.
Animals	: Wister Albino Rats (Female-3+3)
Age	**:** 6-8 weeks
Body Weight on Day 0	**:** 150-200gm.
Acclimatization	**:** Seven days prior to dosing.
Veterinary examination	**:** Prior and at the end of the acclimatization period.
Identification of animals	**:** By cage number, animal number and individual marking by using Picric acid.
Numberofanimals	: 3 Female/group,
Routeofadministration	: Oral

Diet	**:** Pellet feed supplied by Sai meera foods Pvt Ltd, Bangalore
Water	**:** Aqua guard portable water in polypropylene bottles.
Housing & Environment	**:** The animals were housed in Polypropylene cages provided with bedding of husk.
Housing temperature	**:** between 22ºC ± 3ºC.
Relative humidity	**:** between 30% and 70%,
Air changes	**:** 10 to 15 per hour and
Dark and light cycle	**:** 12**:**12 hours.
Duration of the study	**:** 14 Days

Administration of Doses:

Naga Chendhuram was suspended in water and administered to the groups of wistar albino rats in a single oral dose by gavage using a feeding needle. The control group received an equal volume of the vehicle. Animals were fasted 12 hours prior to dosing. Following the period of fasting, the animals were weighed and then the test substance was administered. Three Female animals are used for each group. The dose level of 3mg/kg body weight was administered. After the substance has been administered, food was withheld for a further 3-4 hours. The principle of laboratory animal care was followed. Observations were made and recorded systematically and continuously as per the guideline after substance administration. The visual observations included skin changes, mobility, aggressively, sensitivity to sound and pain, as well as respiratory movements. Finally, the number of survivors was noted after 24 hrs and these animals were then monitored for a further 14 days and observations made daily. The toxicological effect was assessed on the basis of mortality.

Observations:

Animals are observed individually after dosing at least once during the first 30 minutes, periodically during the first 24 hours, with special attention given during the first 4 hours, and daily thereafter, for a total of 14 days, except where they need to be removed from the study and humanely killed for animal welfare reasons or are found dead. It should be determined by the toxic reactions, time of onset and length of recovery period, and may thus be extended

when considered necessary. The times at which signs of toxicity appear and disappear are important, especially if there is a tendency for toxic signs to be delayed. All observations are systematically recorded with individual records being maintained for each animal.

Observations include changes in skin and fur, eyes and mucous membranes, and also respiratory, circulatory, autonomic and central nervous systems, and somatomotor activity and behavior pattern. Attention was directed to observations of tremors, convulsions, salivation, diarrhoea, lethargy, sleep and coma. The principles and criteria summarized in the Humane Endpoints Guidance Document taken into consideration. Animals found in a moribund condition and animals showing severe pain or enduring signs of severe distress was humanly killed. When animals are killed for human reasons or found dead, the time of death was recorded.

Behaviour:

The animals will be observed closely for behaviour in the first four hours which includes abnormal gait, aggressiveness, exophthalmos, ptosis, akinesia, catalepsy, convulsion, excitation, head twitches, lacrimation, loss of corneal reflex, loss of traction, piloerection reactivity of touch, salivation, scratching, sedation, chewing, head movements, sniffing, straub, tremor and writhes, diarrhea, leathery, sleep and coma.

Body Weight:

Individual weight of animals was determined before the test substance was administered and weights will be recorded at day 1, 7, and 14 of the study. Weight changes were calculated and recorded. At the end of the test, surviving animals were weighed and humanly killed.

Food and water Consumption:

Food and water consumed per animal was calculated for control and the treated dose groups.

Mortality:

Animals were observed for mortality throughout the entire period.

Results:

All data were summarized in tabular form, (Table-1-4) showing for each test group the number of animals used, the number of animals displaying signs of toxicity, the number of animals found dead during the test ,description of toxic symptoms,, weight changes, food and water intake.

4.5.2 SUB ACUTE TOXICITY

REPEATED DOSE 28-DAY ORAL TOXICITY STUDY OF *NAGA CHENDHURAM*

Test Substance : **Naga Chendhuram**

Animal Source : TANUVAS,Madhavaram, Chennai.

Animals : Wister Albino Rats (Male -24, and Female-24)

Age **:** 6-8 weeks

Body Weight **:** 150-200gm.

Acclimatization **:** Seven days prior to dose.

Veterinary examination **:** Prior and at the end of the acclimatization period.

Identification of animals **:** By cage number, animal number and individual marking by using Picric acid

Diet **:** Pellet feed supplied by Sai meera foods PvtLtd, Bangalore

Water **:** Aqua guard portable water in polypropylene bottles.

Housing & Environment **:** The animals were housed in Polypropylene cages provided with bedding of husk.

Housing temperature **:** between 22ºC $\pm$ 3ºC.

Relative humidity **:** between 30% and 70%,

Air changes **:** 10 to 15 per hour

Dark and light cycle **:** 12**:**12 hours.

Duration of the study **: 28 Days.**

Table 5

Groups	**No of Rats**
Group I Vehicle control (Water)	12(6male,6 female)
Group II NACM- low dose X (3mg)	12 (6male,6 female)
Group III NACM- Mid dose 5X (15mg)	12 (6male,6female)
Group IV NACM- High dose 10X(30 mg)	12(6male,6female)

NACM -NAGA CHENDHURAM

Methodology

Randomization, Numbering and Grouping of Animals:

48 Wistar Albino Rats (24M + 24F) were selected and divided into 4 groups. Each group consist of 12 animals (Male -6, and Female-6). First group treated as a control and other three group were treated with test drug (low, mid, high) for 28 days. Animals were allowed acclimatization period of 7 days to laboratory conditions prior to the initiation of treatment. Each animal was marked with picric acid. The females were nulliparous and non-pregnant.

Justification for Dose Selection:

As per OECD guideline three dose levels were selected for the study. They are low dose (X), mid dose dose (5X), high dose (10X). X is calculated by multiplying the therapeutic dose (130 mg) and the body surface area of the rat (0.018). i.e X dose is (2.34mg—rounded to 3mg), 5X dose is 15mg/animal,10X dose is 30mg/animal.

Preparation and Administration of Dose:

Naga Chendhuram suspended in prescribed medium , It was administered to animals at the dose levels of X, 5X, 10X. The test substance suspensions were freshly prepared every two days once for 28 days. The control animals were administered vehicle only. The drug was administered orally by using oral gavage once daily for 28 consecutive days.

Observations:

Experimental animals were kept under observation throughout the course of study for the following:

Body Weight:

Weight of each rat was recorded on day 0, at weekly intervals throughout the course of study.

Food and water Consumption:

Food and water consumed per animal was calculated for control and the treated dose groups.

Clinical signs:

All animals were observed daily for clinical signs. The time of onset, intensity and duration of these symptoms, if any, were recorded.

Mortality:

All animals were observed twice daily for mortality during entire course of study.

Necropsy:

All the animals were sacrificed by excessive anaesthesia on day 29. Necropsy of all animals was carried out.

Laboratory Investigations:

Following laboratory investigations were carried out on day 29 in animals fasted over-night. Blood samples were collected from orbital sinus using sodium heparin (200IU/ml) for Bio chemistry and potassium EDTA (1.5 mg/ml) for Hematology as anticoagulant. Blood samples were centrifuged at 3000 r.p.m. for 10 minutes.

Haematological Investigations:

Haematological parameters were determined using Haematology analyzer.

Biochemical Investigations:

Biochemical parameters were determined using auto-analyzer.

Histopathology:

Control and highest dose group animals will be initially subjected to histopathological investigations. If any abnormality found in the highest dose group than the low, then the mid dose group will also be examined. Organs will be collected from all animals and preserved in 10% buffered neutral formalin for 24 h and washed in running water for 24 h. The organ sliced 5 or 6µm sections and were dehydrated in an auto technicon and then cleared in benzene to remove absolute alcohol. Embedding was done by passing the cleared samples through three cups containing molten paraffin at 50°C and then in a cubical block of paraffin made by the "L" moulds. It was followed by microtome and the slides were stained withHaematoxylin-eosin red.

Statistical analysis:

Findings such as body weight changes, water and food consumption, hematology and blood chemistry were subjected to One-way ANOVA followed by dunnet-t test using a computer software programme – Graph pad version 7.All data were summarized in tabular form, (Table-6 to 12)

4.6 PHARMACOLOGICAL STUDY

4.6.1 ANALGESIC ACTIVITY

Eddy's Hot plate method in rats

The hot plate assay method was employed for the purpose of preferential assessment of possible analgesic effects of Naga Chendhuram (NCM) The analgesic drug, Pentazocine, was used for positive control group. In this experiment, four groups (n=6) of wister rats (200–250 g) were placed on a hot plate maintained at room temperature for 15 min. Food was withdrawn on the preceding night of the experiment. Group-1 normal control (0.5% CMC p.o.), and group-2 Pentazocine (30mg/kg, i.p.), whereas groups-3 and 4 animals received Naga Chendhuram (NCM)(15and 30 mg/kg, p. o respectively). Each animal was then individually placed gently on Eddy's hot plate at 55^{o}C. Latency to exhibit nociceptive responses such as licking paws or jumping off the hot plate, were determined 15, 30, 45and 60min after administration of the test drug or vehicle.

4.6.2 Anti-inflammatory studies using Naga Chendhuram (NCM)

For the experiment, the animals were divided into 5 groups with 6 animals in each group.

Group-I (control) received 3% gum acacia 10 ml/kg p.o.

Group-II (Carageenan) received 0.1ml of 1% w/v suspension of carrageenan S.C

Group-III (standard) received Indomethacin 40 mg/kg p.o.

Group-1V(Test-1) received NCM15mg/kg p.o.

Group-V(Test-2) received NCM 30mg/kg p.o.

All the drugs were administered orally and the volume of medicaments kept constant at 10 ml/kg body weight of the animals it was administered orally to rats 1 hr before subcutaneous injection of carrageenan. After 1 hr 0.1ml of 1% w/v suspension of carrageenan was injected into sub-plantar region of the left hind paw to all the groups. The paw volume was measured at 1, 2, 3, 4, and 5 hr using Plethysmometer (Model 7150 UGO Basile, Italy) Edema was expressed as the mean increase in paw volume relative to control animals.

4.7 CLINICAL STUDY

VARMA PULLIGAL

- ✓ Nangana Pootu –In between the lumbar vertebrae and sacrum
- ✓ Naivari Adangal-dimple present 5 fingers lateral to Nangana Pootu
- ✓ Kaal Mannai- At the end of the calf muscle
- ✓ Komberi Kalam- Fingers above medial malleolus
- ✓ Perunarambu Adangal- At the center of popliteal fossa
- ✓ Ullangal Vellai- Present in plantar region

STUDY DESIGN

Study type **:** An Open Comparative Clinical trial

Study Place **:** Room no. 4, PG Sirappu Maruthuvam OPD,

OPD of Arignar Anna Hospital, GSMC

Chennai-106

Study Period **:** 12 months after completion of Preclinical studies.

Sample size **:** 60 patients OPD

20 Cases -Under External drug and vermam therapy

20 Cases -Under both Internal and external drugs

20 Cases -Under internal, external drug and varmam therapy

SUBJECT SELECTION

As and when patients reporting at Room no. 04, PG Sirappu Maruthuvam OPD, Aligner Anna Govt. Hospital, GSMC with the symptoms of inclusion criteria will be subjected to screening test and documented using screening proforma.

INCLUSION CRITERIA

- ✓ Age : 35-60
- ✓ Sex : Both male and female
- ✓ Patients having any one of the symptoms of lower back pain radiates to the lower extremities anteriorly, tenderness, numbness.
- ✓ Limitation of lower back movements.
- ✓ Patient willing to sign consent form.

EXCLUSION CRITERIA

History of

- ✓ Traumatic condition
- ✓ Inter vertebral disc prolapse
- ✓ Ankylosing spondylosis
- ✓ Spondylolisthesis
- ✓ Neoplasm
- ✓ Congenital anamolies
- ✓ Gibbus deformity
- ✓ Sacralization
- ✓ Cardiac diseases
- ✓ Pregnant women and lactating mother
- ✓ Patients with any other serious systemic illness

WITH DRAWL CRITERIA:

- ✓ Intolerance to the drug and development of adverse reaction during drug trial.
- ✓ Poor patient compliance and defaulters.
- ✓ Patient turned unwilling to continue in the course of clinical trial.
- ✓ Occurrence of any serious illness
- ✓ SRD REPORTING.

ADR REPORTING

- If ADR is reported patients will be referred to SCRI(Peripheral Pharmacovigilance centre)

MODERN INVESTIGATION:

BLOOD INVESTIGATION

Total Blood count,

Blood sugar(F), (PP) ,

Lipid profile,

Renal function test,

Liver function test

RADIOLOGICAL INVESTIGATIONS

X-ray: Lumbar spine AP view , Lateral view

CLINICAL ASSESSMENT:

Pain Management – Access by visual pain analogue scale

Acute and Chronic Stage

Improvement in range of Movements

Forward Bending

Backward Bending

Pain during Walking

Slow Walking

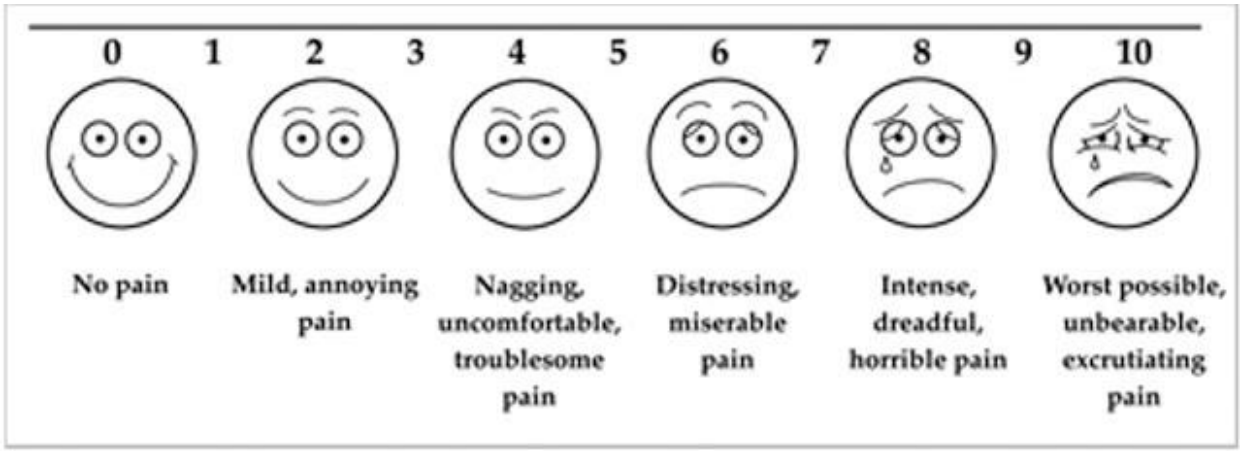
Fast Walking

Improvement in Confortability

In Prolonged Sitting Position

In Prolonged Standing Position

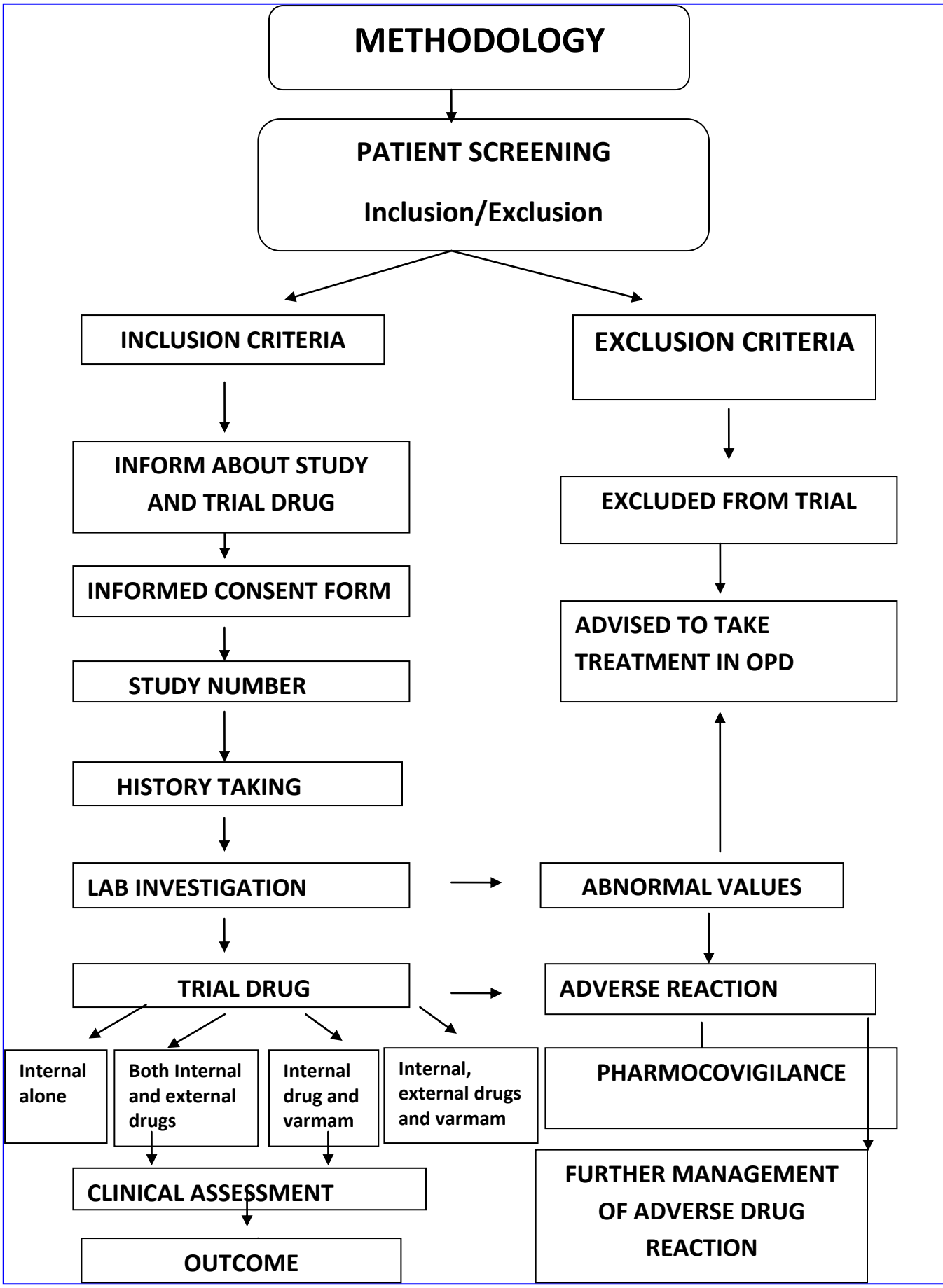
ASSESSMENT TOOL- VISUAL ANALOG SCALE



METHODOLOGY OF TREATMENT

STUDY ENROLMENT

Patient reporting at the OPD with any one of the symptoms of low back pain , tenderness, tingling sensation, transient numbness, limitation of lower back movements, above symptoms radiates to the lower extremities anteroirly, are chosen for enrolment based on the inclusion criteria. The patients who are enrolled are informed about the study trial drug, possible out comes and the objectives of the study in the language and terms understandable to them and the informed consent would be obtained in writing from them in the consent form.


METHODOLOGY
PATIENT SCREENING
Inclusion/Exclusion
INCLUSION CRITERIA
EXCLUSION CRITERIA
INFORM ABOUT STUDY AND TRIAL DRUG
EXCLUDED FROM TRIAL
INFORMED CONSENT FORM
ADVISED TO TAKE TREATMENT IN OPD
STUDY NUMBER
HISTORY TAKING
LAB INVESTIGATION
ABNORMAL VALUES
TRIAL DRUG
ADVERSE REACTION
Internal alone
Both Internal and external drugs
Internal drug and varmam
Internal, external drugs and varmam
PHARMOCOVIGILANCE
CLINICAL ASSESSMENT
FURTHER MANAGEMENT OF ADVERSE DRUG REACTION
OUTCOME

Conduct of the study

The trial drug **"NAGA CHENDHURUM"** (internal) will be given in the opd department of Sirappu Maruthuvam for 60 patients. The trial drug **"NAGA CHENDHURUM"** will be given along with **"VARMAM THERAPY" with the oil ": MULAYOGA NIRKUNDI THAILAM "(external)** in opd for another 60 patients, gsmc, Chennai the patients will be asked to have a regular follow up in the op department once in 7 days. In each and every visit the clinical assessment will be recorded in the prescribed proforma. The laboratory investigation will be done before and after treatment and recorded in the prescribed format. At the end of the trial the patients are advised to come to op if the same symptom arises after 2 months of trial.

ASSESSMENT OF RESULTS:

CRITERION MEASURES Physical level

1. Visual Analog Scale- Pain

2. Range of movements..

RELIABILITY OF DATA

The reliability of data was ensured by using standard instruments and by establishing tester competency reliability of the test. In this the data was based on getting details from the subjects through pain scale questionnaire. Hence no instruments were needed and used

RELIABILITY OF INSTRUMENTS

The pain scale questionnaire alone used to collect the needed data to measure the pain related variable.

TESTER'S RELIABILITY

Reliability was established as the pain scale questionnaire was a standard one.

ORIENTATION OF THE SUBJECTS

Before collection of the data, the subjects were oriented according to the purpose of the study. The subjects were properly guided as how to mark the pain score in the questionnaire. The investigator had explained the tests to the subjects and about the procedure adopted for assessing the pain management.

i. Visual Analog Test- Pain. (0-10)

Purpose : To measure the intensity of pain

Equipments : Questionnaire

Recording : Recorded in relaxed sitting position

Scoring : Zero to ten

Statistical Technique:

Data collected were entered in Excel Spread sheet and analyzed using STATA statistical software package release 11. Universal pain scale was used to classify the degree of pain in each group (note 2). Improvement before and after treatment were grouped as shown in note 3. We used paired t test to compare mean difference between pain scores before and after treatment in each arm; the one-way ANOVA test for comparison of means across multilevel variables. Simple calculations like Percentages, Proportions and Mean values were derived. A type I error of 0.05 was considered in all analyses.

Note 1: PAIN ASSESMENT SCALE

UNIVERSAL PAIN ASSESMENT

0 ---------- No pain

1-3 ---------- Mild pain

4-6 ---------- Moderate pain

7-10 ---------- Severe pain

DATA COLLECTION FORMS

Required information will be collected from each patient by using following forms.

FORM l **:** Screening and Selection Proforma

FORM ll **:** History taking Proforma

FORM llI **:** Clinical Assessment Proforma

FORM lV **:** Laboratory Investigation Proforma

FORM V **:** Informed Consent Form

FORM VI **:** Withdrawal Form

FORM VII **:** Patient Information Sheet

FORM VIII **:** Dietary advice Form

FORM IX **:** Adverse reaction Form

DATA ANALYSIS:

After enrolling the patients in the study a separate file for each patient will be maintained and all forms will be kept in the file. Whenever the patient visits OPD during the study period necessary entries will be made in the assessment forms. The data entries and adverse events if any will be monitored by the Head of the Department.

OUTCOME OF TREATMENT

PRIMARY OUTCOME:

- ✓ *Pain reduction is evidenced by pain assessment scale (visual analogue scale).*
- ✓ Reduction of stiffness and pain present in the lumbar region.
- ✓ Improvement in the range of movements of lumbar region.
- ✓ Improvement in ability to sit, stand and walk for a long time without pain.

SECONDARY OUTCOME:

Secondary outcome is assessed by comparing the safety parameters before and after treatment

ETHICAL ISSUES:

- Informed consent will be obtained from the patients after explaining about the clinical trial in an understandable language.
- After the consent of the patient (through consent form) they will be enrolled in the study.
- Treatment will be provided free of cost
- No other medicines will be used except the trial drug
- The data collected from the patient will be kept confidentially. The patient will be informed about the diagnosis, treatment and follow up.
- The patients who are excluded (as per the exclusion criteria) are given proper treatment with full care at OPD.
- In conditions of treatment failure, adverse reactions patients will be given alternative treatment at the OPD with full care through the end.

5. RESULTS AND OBSERVATION

5.1 ORGANOLEPTIC CHARACTER

S.NO	CHARACTERS	RESULTS
1	COLOUR	Red
2	TASTE	Tasteless
3	ODOUR	Odourless
4	APPERENCE	Fine powder
5	SOLUBILITY	Soluble in water and alcohol

5.2 TRADITIONALTESTING METHOD FOR CHENDHURAM

S. NO	TESTS	INFERENCE
1	Floating of water	+
2	Finger furrows test	+
3	Lusterless	+
4	Tasteless	+
5	Colour	Red

Inference:

Regarding **TRADITIONALTESTING METHOD** Floating of water, Finger furrows test, Lusterless, Tasteless were present, red Colour were observed.

5.3 PHYSICO-EMICAL ANALYSIS RESULTS

S.NO	PARAMETERS	MEAN RESULTS
1	Loss on drying at 105^0C	Nil
2	Total ash	92.38%
3	Water soluble ash	33.51%
4	Acid soluble ash	46%
5	P^H	6.77

5.4 QUALITATIVE ANALYSIS OF HEAVY METAL

S.NO	HEAVY METALS	RESULTS
1	Lead	ND
2	Mercury	ND
3	Arsenic	ND
4	Cadmium	ND

ND – NON DEDECTABLE

5. 5 TOXICITY STUDY:

PREPARATION OF ANIMALS:

The animals are randomly selected, marked to permit individual identification, and kept in their cages for at least 7 days prior to dosing to allow for acclimatization to the laboratory conditions.

SL	Group Control	Observation	Group Test Group	Observation
1	Body weight	Normal	Body weight	Normally increased
2	Assessments of posture	Normal	Assessments of posture	Normal
3	Signs of Convulsion Limb paralysis	Normal	Signs of Convulsion Limb paralysis	Absence of sign (-)
4	Body tone	Normal	Body tone	Normal
5	Lacrimation	Normal	Lacrimation	Absence
6	Salivation	Normal	Salivation	Absence
7	Change in skin color	No significant color change	Change in skin color	No significant color change
8	Piloerection	Normal	Piloerection	Normal
9	Defecation	Normal	Defecation	Normal
10	Sensitivity response	Normal	Sensitivity response	Normal
11	Locomotion	Normal	Locomotion	Normal
12	Muscle gripness	Normal	Muscle gripness	Normal
13	Rearing	Mild	Rearing	Mild
14	Urination	Normal	Urination	Normal

Table 2 (Observational study Results)

No	Dose mg/kg	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1.	**Control**	+	-	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2.	**3mg**	+	-	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-

(+ Present, - Absent)

1..Alertness 2. Aggressiveness 3. Pile erection 4. Grooming 5. Gripping 6. Touch Response 7. Decreased Motor Activity 8. Tremors 9. Convulsions 10. Muscle Spasm 11. Catatonia 12. Muscle relaxant 13. Hypnosis 14. Analgesia 15.Lacrimation 16. Exophthalmos 17. Diarrhea 18. Writhing 19. Respiration 20. Mortality.

Table 3 (Body weight Observation)

DOSE	DAYS		
	1	7	14
CONTROL	210.6±31.474	211.2 ± 14.162	220.2 ± 24.22
HIGH DOSE	220.5± 27.75	221.4 ± 3.22	224.1 ± 12.72
P value (p)*	NS	NS	NS

N.S- Not Significant, **($p > 0.01$), *($p > 0.05$), n = 10 values are mean ± S.D (One way ANOVA followed by Dunnett's test)

Table 3: Water intake (ml/day) of Wistar albino rats group exposed to (*Naga Chendhuram):*

DOSE	DAYS		
	1	6	14
CONTROL	54 ± 2.22	53±7.42	58.4±2.54
HIGH DOSE	62.2±1.21	62.8±4.46	64.6±2.22
P value (p)*	NS	NS	NS

N.S- Not Significant, **($p > 0.01$), *($p > 0.05$), n = 10 values are mean ± S.D (One way ANOVA followed by Dunnett's test)

Table 4: Food intake (gm/day) of Wistar albino rats group exposed to *Naga Chendhuram*

DOSE	DAYS		
	1	7	14
CONTROL	45.24±6.32	45.2±6.32	45.4±4.16
High DOSE	42.2±1.44	44.8±2.32	46.1±4.14

SUB ACUTE TOXICITY REPORTS

REPEATED DOSE 28-DAY ORAL TOXICITY STUDY OF *NAGA CHENDHURAM*

Groups	**No of Rats**
Group II NACM- low dose X (3mg)	12 (6male,6 female)
Group III NACM- Mid dose 5X (15mg)	12 (6male,6female)
Group IV NACM- High dose 10X(30 mg)	12(6male,6female)

NACM -NAGA CHENDHURAM

Repeated Dose 28- day oral toxic study of Naga Chendhuram

Table 6: Body weight of wistar albino rats group exposed to *NagaChendhuram*

DOSE	**DAYS**				
	1	7	14	21	28
CONTROL	260.4±12.42	261.4 ± 20.14	261.7 ± 19.60	262.6 ± 19.16	262.4 ± 12.12
LOW DOSE	240.2 ± 10.12	240.7 ± 38.24	241.4± 42.14	243 ± 52.16	242.42± 12.54
MID DOSE	196.4± 08.74	196.3 ± 12.14	196.2 ± 88.14	198.1 ± 13.66	199.4 ± 22.10
HIGH DOSE	207.6± 16.84	207.8 ± 12.42	208.4 ± 22.26	208 ± 24.18	209 ± 56.41
P value (p)*	NS	NS	NS	NS	NS

NS- Not Significant, **(p > 0.01),*(p >0.05), n = 10 values are mean ± S.D (One way ANOVA followed by Dunnett's test)

Table 7: Water intake (ml/day) of Wistar albino rats group exposed to *Naga Chendhuram*

DOSE	DAYS				
	1	6	14	21	28
CONTROL	55.9 ± 9.72	56±8.22	57.2±2.20	59±2.16	59.4±2.16
LOW DOSE	58.2±1.21	58.8±3.22	58.9±1.62	60.2±1.28	60.8±1.23
MID DOSE	62.2±2.12	62.3±1.12	63.1±2.422	63.4±1.14	68.4±1.32
HIGH DOSE	64.1±1.21	64.2±1.24	64.4±1.14	64.6±1.42	66.8±2.52
P value (p)*	NS	NS	NS	NS	NS

N.S- Not Significant, **(p > 0.01), *(p >0.05), n = 10 values are mean ± S.D (One way ANOVA followed by Dunnett's test)

Table 8: Food intake (gm/day) of Wistar albino rats group exposed to *Naga Chendhuram*

DOSE	DAYS				
	2	7	23	22	28
CONTROL	27±5.14	28.5±2.12	29.5±2.17	28.5±1.18	27±2.16
LOW DOSE	29.7±1.18	29.3±1.41	30.1±1.16	30.4±1.21	31.6±1.42
MID DOSE	37.2±2.44	37.2±3.60	37.2±4.25	38.2±2.18	38.2±1.44
HIGH DOSE	29.1±1.14	29.1±1.24	29.6±2.16	29.2±1.20	29.6±3.32
P value (p)*	NS	NS	NS	NS	NS

N.S- Not Significant, **(p > 0.01), *(p >0.05), n = 10 values are mean ± S.D (One way ANOVA followed by Dunnett's test

Table 9: Haematological parameters of Wistar albino rats group exposed to *Naga Chendhuram*

Category	Control	Low dose	Mid dose	High dose	P value (p)*
Haemoglobin(g/dl)	14.8±0.58	14.80±0.64	15.4±0.66	15.18±0.44	N.S
Total WBC ($\times 10^3$ l)	7.91±0.52	7.25±0.16	7.48±0.17	7.20±1.32	N.S
Neutrophils (%)	30.25±0.04	31.22±0.12	32.10±1.32	33.06±1.20	N.S
lymphocyte (%)	61.14±1.42	60.12±2.10	60.10±2.22	60.40±2.26	N.S
Monocyte (%)	1.86±0.07	1.85±0.09	1.66±0.03	1.81±0.06	N.S
Eosinophil (%)	0.62±0.04	0.65±0.02	0.66±0.01	0.63±0.06	N.S
Platelets cells10^3/µl	786.14±4.42	788.41±4.16	783.13±7.0	787.16±6.74	N.S
Total RBC 10^6/µl	6.88±0.12	6.86±0.46	6.62±0.44	6.15±0.22	N.S
PCV%	47.56±0.6	47.46±1.13	48±1.28	47.80±2.24	N.S
MCHC g/dL	34.4±1.32	34.6±1.28	34.28±1.20	34.33±1.12	N.S
MCV fL(µm^3)	52.07±3.24	52.20±1.21	53.10±1.34	54.24±1.42	N.S

N.S- Not Significant, **($p > 0.01$), *($p > 0.05$), n = 10 values are mean ± S.D (One way ANOVA followed by Dunnett's test)

Table 10 : Biochemical Parameters of Wistar albino rats group exposed to *Naga Chendhuram*

BIOCHEMICAL PARAMETERS	CONTROL	LOW DOSE	MID DOSE	HIGH DOSE	P Value (p)*
GLUCOSE (R) (mg/dl)	80.24±10.6	80.16±6.14	81.22±14.10	81.62±10.2	N.S
T.CHOLOSTEROL(mg/dl)	128.16±1.42	129.25±1.22	126.82±1.28	126.22±1.83	N.S
TRIGLY(mg/dl)	58.36±1.42	58.32±1.28	59.56±1.32	59.66±1.23*	N.S
LDL	81.6±2.53	83.14±2.34	83±2.42	83.44±14.15	NS
VLDL	16.2±2.34	16.42±4.44	16.44±8.24	16.34±24.26	NS
HDL	30.16±6.18	30.26±2.25	32.28±4.26	34.48±20.12	NS
Ratio 1(T.CHO/HDL)	4.12±2.16	4.16±2.14	4.14±2.24	4.26±2.20	NS
Ratio 2(LDL/HDL)	2.70±1.18	2.74±2.12	2.76±3.10	2.76±18.02	NS
Albumin (g/dL)	4.3±0.26	4.63±0.42	4.64±12.42	4.72±15.68	NS

NS- Not Significant, **(p > 0.01), * (p >0.05), n = 10 values are mean ± S.D (One way ANOVA followed by Dunnett's test)

Table 11: Renal function test of Wistar albino rats group exposed to *Naga Chendhuram*

PARAMETERS	CONTROL	LOW DOSE	MID DOSE	HIGH DOSE	P Value (p)*
UREA (mg/dl)	23.32±0.99	24.28±0.46	24.16±1.28	24.68±1.22	N.S
CREATININE(mg/dl)	0.62±0.08	0.61±0.04	0.62±0.06	0.64±0.08	N.S
BUN(mg/dL)	17.1±0.13	17.10±0.80	17±0.42	17.47±1.12	NS
URIC ACID(mg/dl)	6.22±0.34	6.11±0.22	6.72±0.24*	6.42±0.26	N.S

NS- Not Significant, **(p > 0.01), * (p >0.05) , n = 10 values are mean ± S.D (One way ANOVA followed by Dunnett's test)

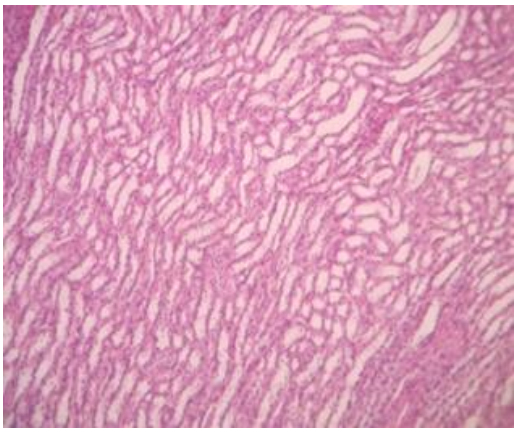
Table 12: Liver Function Test of Wistar albino rats group exposed to *Naga Chendhuram*

PARAMETERS	CONTROL	LOW DOSE	MID DOSE	HIGH DOSE	P Value (p)*
T BILIRUBIN(mg/dl).	0.06±0.06	0.05±0.08	0.6±0.06	0.6±0.04	N.S
SGOT/AST(U/L)	119.15±1.32	119.34±0.52	120.01±1.22	119.75±1.03	N.S
SGPT/ALT(U/L)	70.13±2.18	70.21±1.44	70.14±1.28	71.12±0.48	N.S
ALP(U/L)	133.52±4.26	134±12.14	135.12±14.04*	134.23±12.25*	N.S
T.PROTEIN(g/dL)	7.72±0.36	7.78±0.32	7.76±0.24	7.53±0.48	N.S

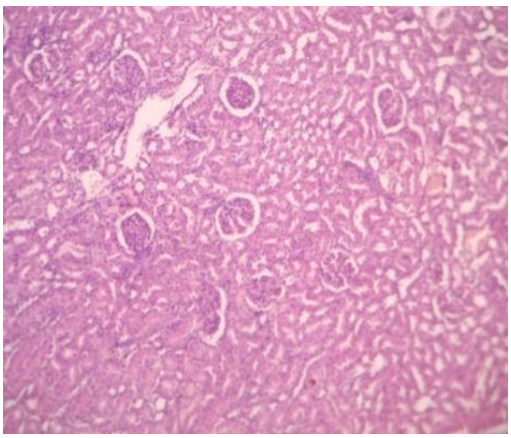
NS- Not Significant, **(p > 0.01), * (p >0.05), n = 10 values are mean ± S.D (One way ANOVA followed by Dunnett's test)

HISTOPATHOLOGY OF KIDNEY:

CONTROL



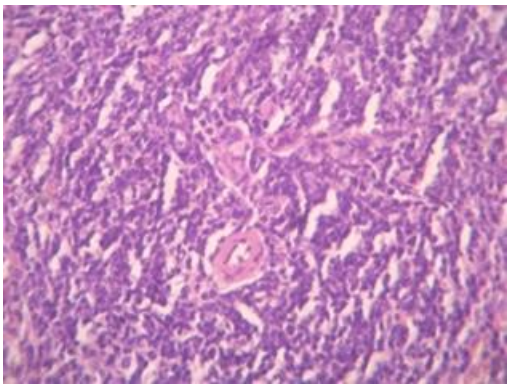
HIGH DOSE



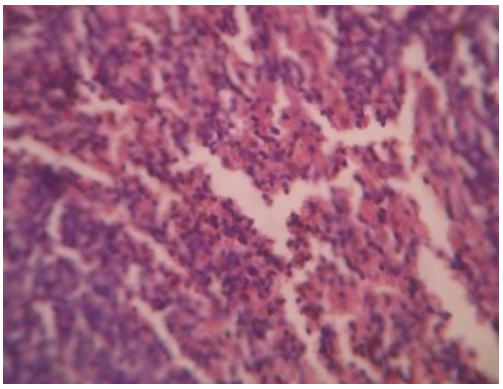
Report
Section studied shows normal glomerulus and renal tubules.

HISTOPATHOLOGY OF SPLEEN

CONTROL



HIGH DOSE

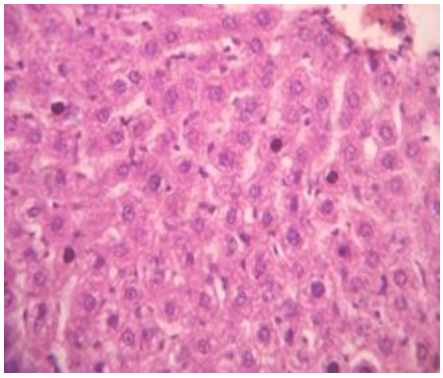


Report

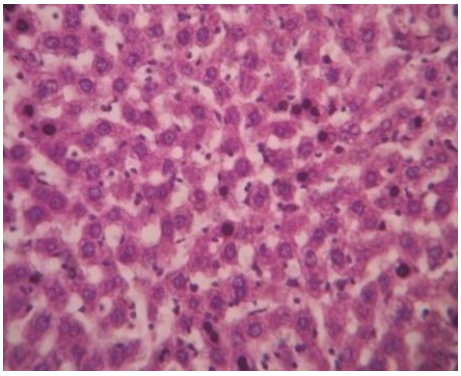
Section studied shows plenty of intra parenchymal hemosiderin laden macrophages.

HISTOPATHOLOGY OF LIVER

CONTROL



HIGH DOSE



Report

Section studied shows normal lobular pattern

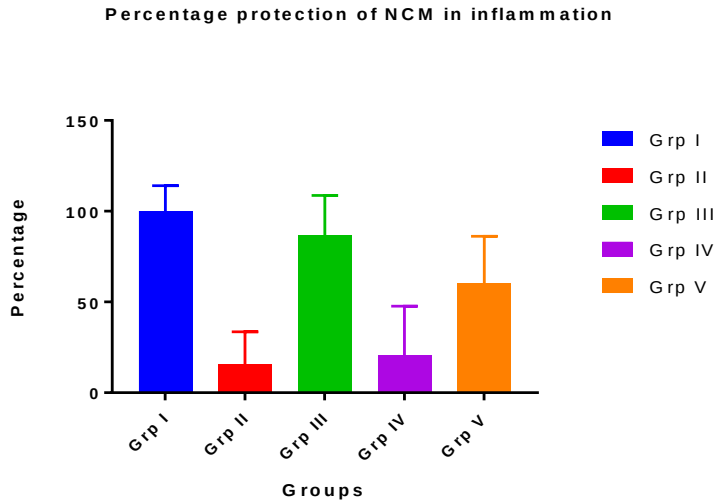
ANTI-INFLAMMATORY STUDIESUSING NAGACHENDHURAM (NCM)

Group	Initial paw volume	5 hr in mm	Difference in paw volume	Percentage protection
I	1.20 ± 0.14	1.20±0.14	0.00	100
II	1.21± 0.17	2.62 ± 0.17	1.41	15.59
III	1.01± 0.06	1.15 ± 0.16	0.24	86.67
IV	1.17 ± 0.13	1.28 ± 0.22	0.05	20.65
V	1.02 ±0.20	1.37 ± 0.28	0.25	60.16

Percentage protection is calculated by the formulae: $(T_2 - - - T_1 / T_2) \times 100$

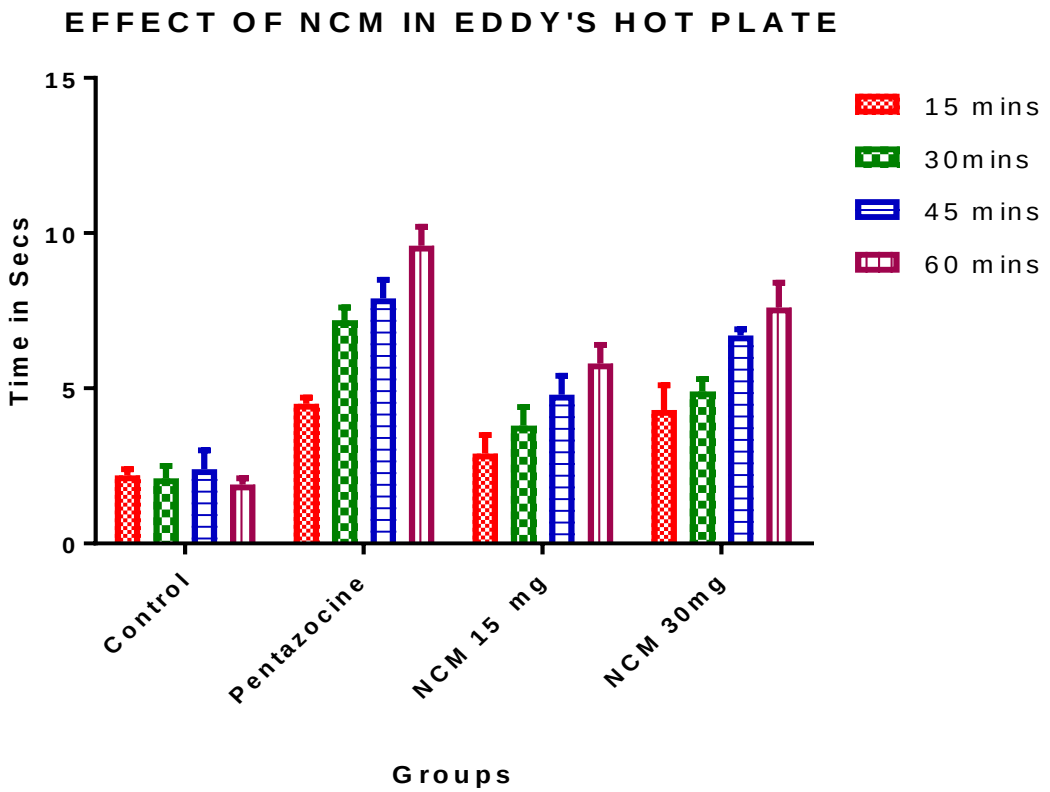
T_1----normal control

T_2----drug treated test



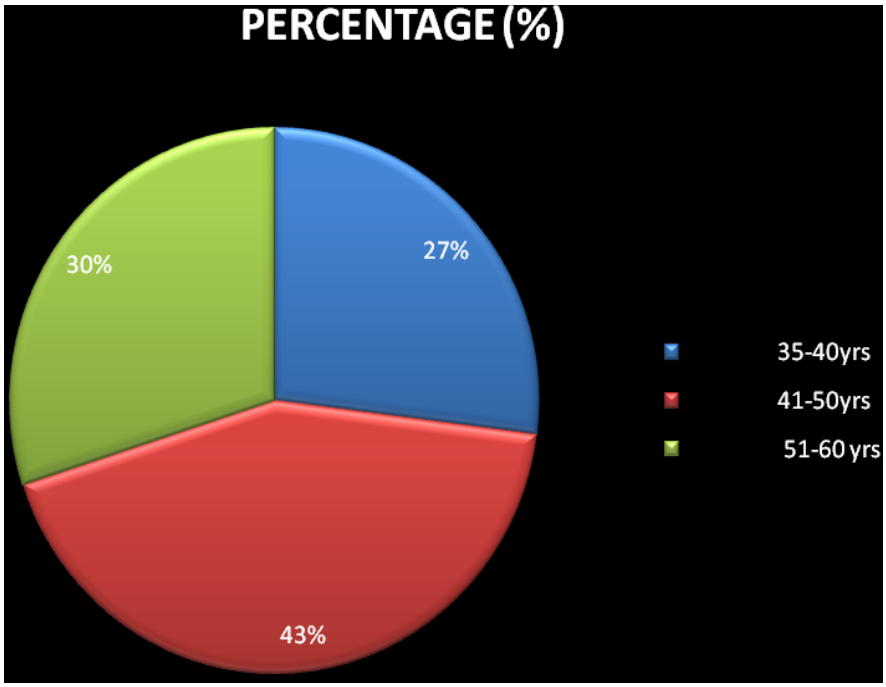
ANALGESIC ACTIVITY:

Groups	Dose Mg/kg	Reaction time			
		15 mins	30mins	45 mins	60 mins
Control	10	2.2±.0.2	2.1±0.4	2.4±0.6	1.9±0.2
Pentazocine	30	4.5±0.2	7.2±0.4	7.9±0.6	9.6±0.6
Naga Chendhuram (NCM)	15	2.9±0.6	3.8±0.6	4.8±0.6	5.8±0.6
Naga Chendhuram (NCM)	30	4.3±0.8	4.9±0.4	6.7±0.2	7.6±0.8
N=6 ;Statistical analysis one way ANOVA followed by Dunnett t-test.					



1. AGE DISTRIBUTION

S.No	AGE IN YEARS	NUMBER OF CASES	PERCENTAGE (%)
1	35-40yrs	16	27%
2	41-50yrs	26	43%
3	51-60 yrs	18	30%

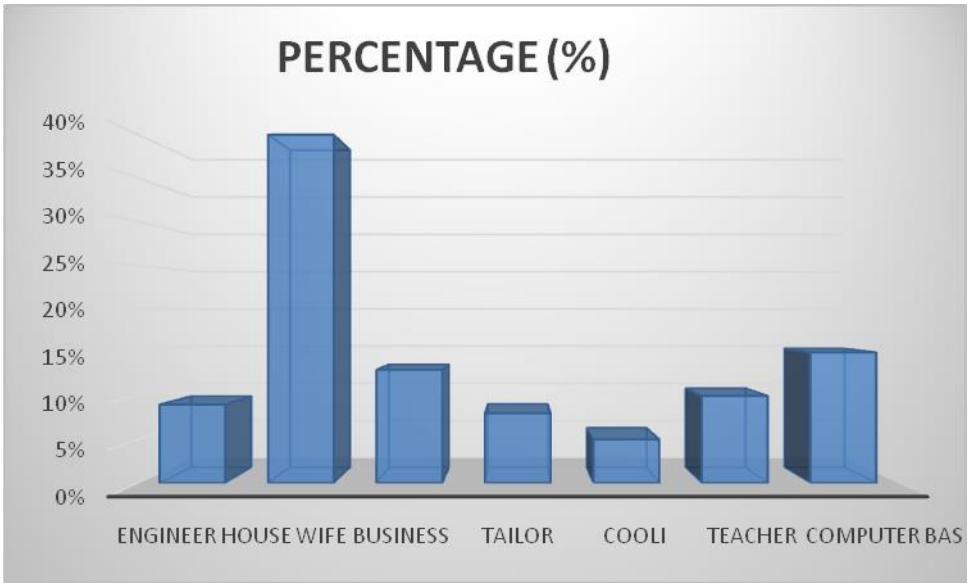


INFERENCE

Majority of the case that is 27% were in the3rd decade, 43% were in the 4th decade, 30% were in the 5th decade.

2.OCCUPATION

S.No	OCCUPATION	NUMBER OF CASES	PERCENTAGE (%)
1	Engineer	5	9%
2	House Wife	24	40%
3	Business	8	13%
4	Tailor	5	8%
5	Cooli	3	5%
6	Teacher	6	10%
7	Computer base job	9	15%

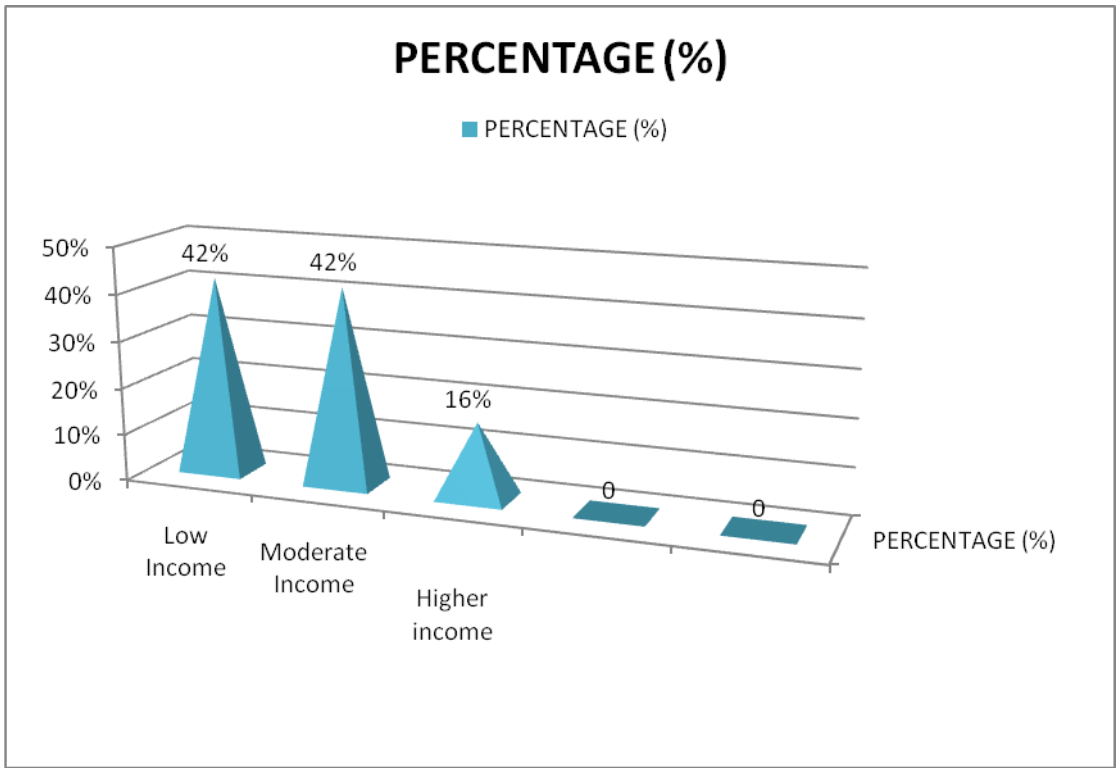


INFERENCE

0ut of 60 patients (100%), 40 were house wife,9% were Engineer, 13% were Business, 8% were Tailor, 5% were cooli,10% were teacher, 15% were in computer base job.

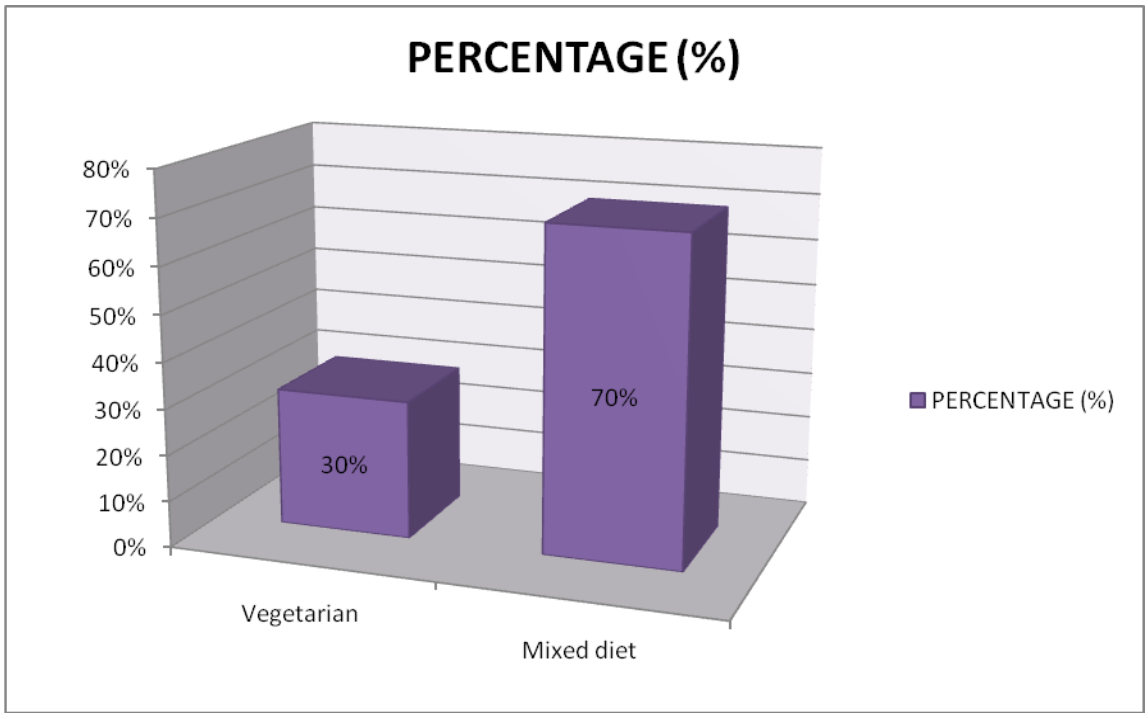
3.SOCIO – ECONOMIC STATUS

S.No	SOCIO – ECONOMIC STATUS	NUMBER OF CASES	PERCENTAGE (%)
1	Low Income	25	42%
2	Moderate Income	25	42%
3	Higher income	10	16%



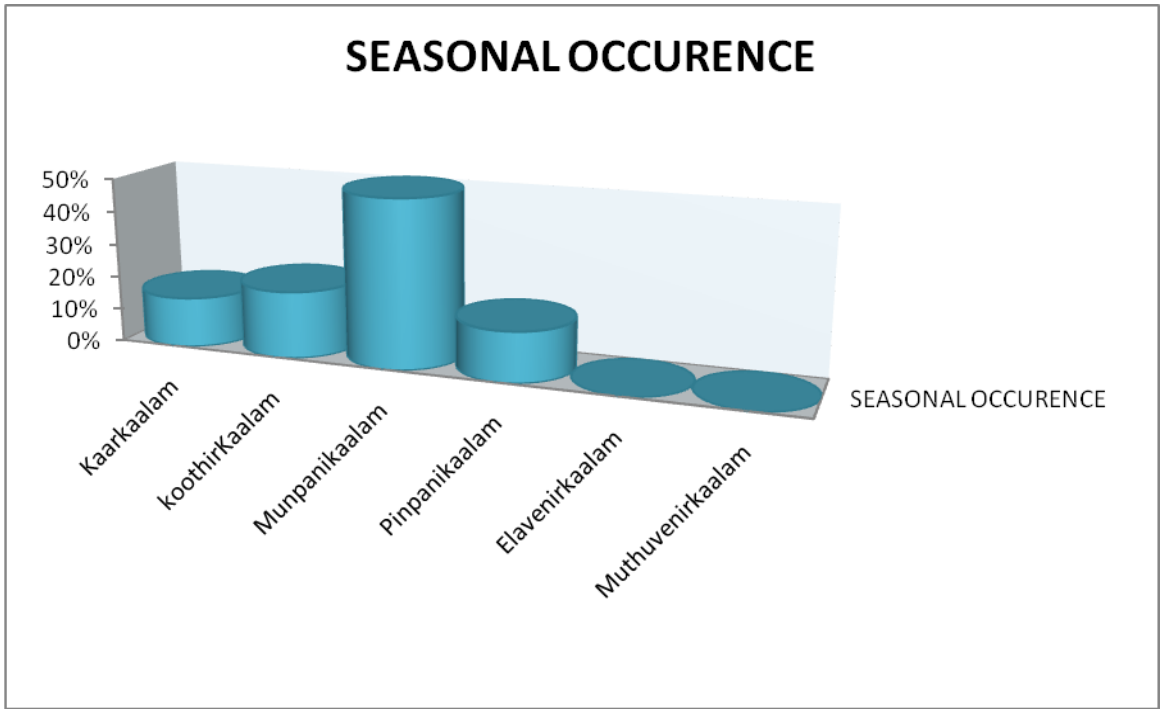
4.DIETARY HABITS

S.No	DIET	NUMBER OF CASES	PERCENTAGE (%)
1	Vegetarian	14	30%
2	Mixed diet	46	70%



5. SEASONAL OCCURENCE

S.No	KAALAM (Season)	NUMBER OF CASES	PERCENTAGE (%)
1	Kaarkaalam (Mid Aug – Mid Oct)	3	15%
2	koothirKaalam (Mid Oct – Mid Dec)	4	20%
3	Munpanikaalam (Mid Dec – Mid Feb)	10	50%
4	Pinpanikaalam (Mid Feb – Mid Apr)	3	15%
5	Elavenirkaalam (Mid Apr – Mid Jun)	0	0%
6	Muthuvenirkaalam (Mid Jun – Mid Aug)	0	0%

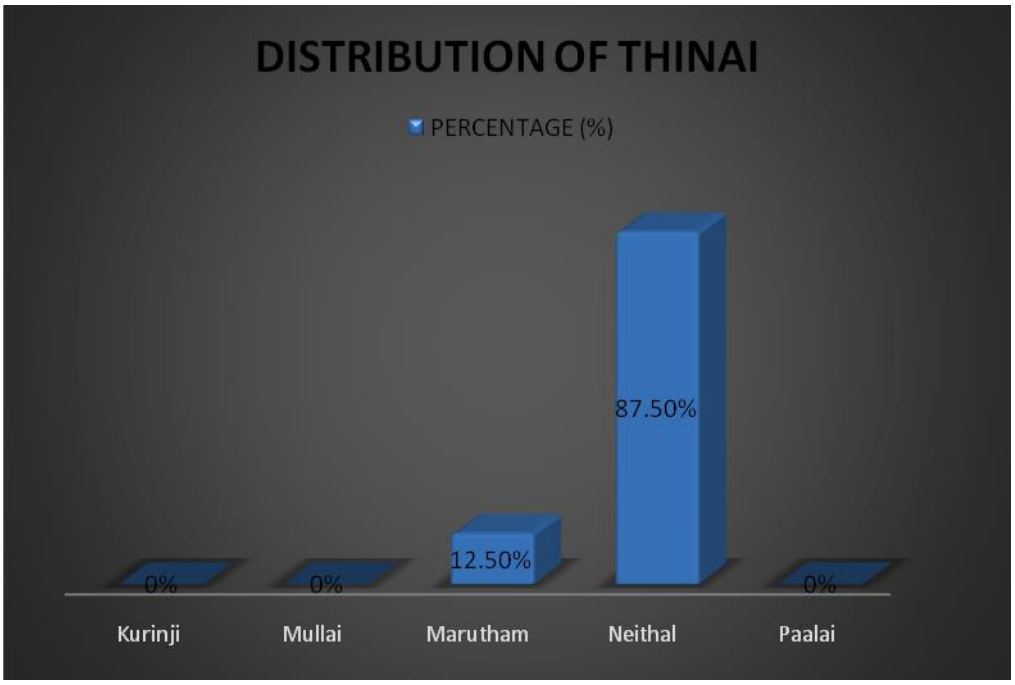


INFERENCE

According to paruvakaalam highest incident of 10 cases (50%) were noted in munpanikaalam and 4 cases (20%) were noted in Koothirkaalam, 3 cases (15%) were noted in kaarkaalam, 3 cases (15%) were noted in Pinpanikaalam.

6. DISTRIBUTION OF THINAI

S.No	THINAI	NUMBER OF CASES	PERCENTAGE (%)
1	Kurinji	0	0%
2	Mullai	0	0%
3	Marutham	5	12.5%
4	Neithal	55	87.5%
5	Paalai	0	0%

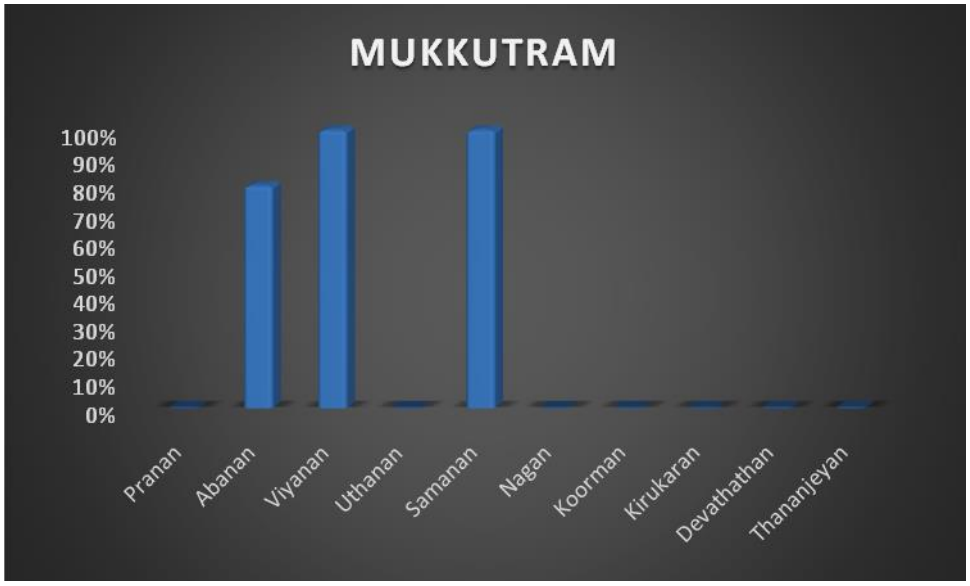


INFERENCE

According to thinai the highest distribution 77.5% was noted in neithal, 12.5% in marutham, 10% in kurinji.

DISTRIBUTION OF MUKKUTRAM – VATHAM

S.No	VATHAM	NUMBER OF CASES	PERCENTAGE (%)
1	Pranan	0	0%
2	Abanan	48	80%
3	Viyanan	60	100%
4	Uthanan	0	0%
5	Samanan	60	100%
6	Nagan	0	0%
7	Koorman	0	0%
8	Kirukaran	0	0%
9	Devathathan	0	0%
10	Thananjeyan	0	0%

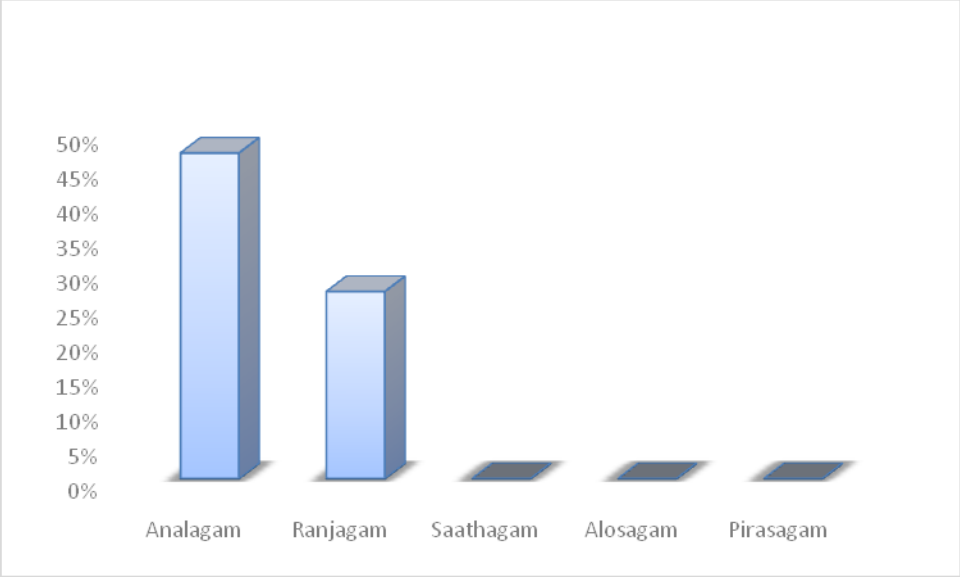


INFERENCE

Out of 60 patients Pranan was affected in 0 patients (0%), Abanan was affected in 48 pateints (80%), Viyanan was affected in 60 patients (100%), an Koorman ,kirukaran, Devadhathan, Dananjayan was affected in 0 patients (0%)

DISTRIBUTION OF MUKKUTRAM – PITHAM

S.No	PITHAM	NUMBER OF CASES	PERCENTAGE (%)
1	Analagam	28	47%
2	Ranjagam	16	27%
3	Saathagam	0	0%
4	Alosagam	0	0%
5	Pirasagam	0	0%

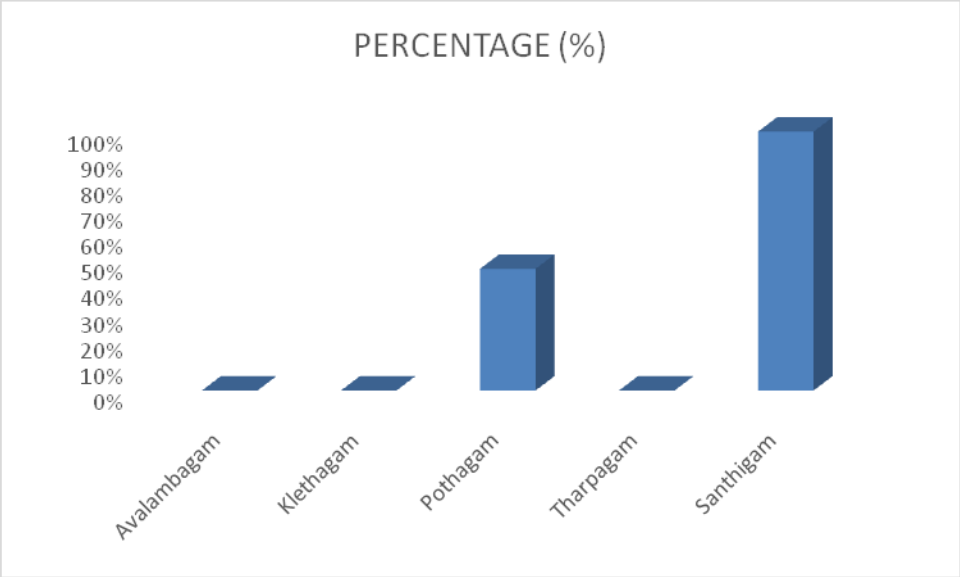


INFERENCE

Out of 60 patients Analagam was affected in 28 patients (47%), Ranjagam was affected in 16 patients (27%), Sathagam was affected in 0 patients (0%), Aalosagam was affected in 0 patients (0%), pirasagam was affected in 0 patients (0%)

DISTRIBUTION OF MUKKUTRAM – KABHAM

S.No	KABHAM	NUMBER OF CASES	PERCENTAGE (%)
1	Avalambagam	0	0%
2	Klethagam	0	0%
3	Pothagam	28	47%
4	Tharpagam	0	0%
5	Santhigam	60	100%

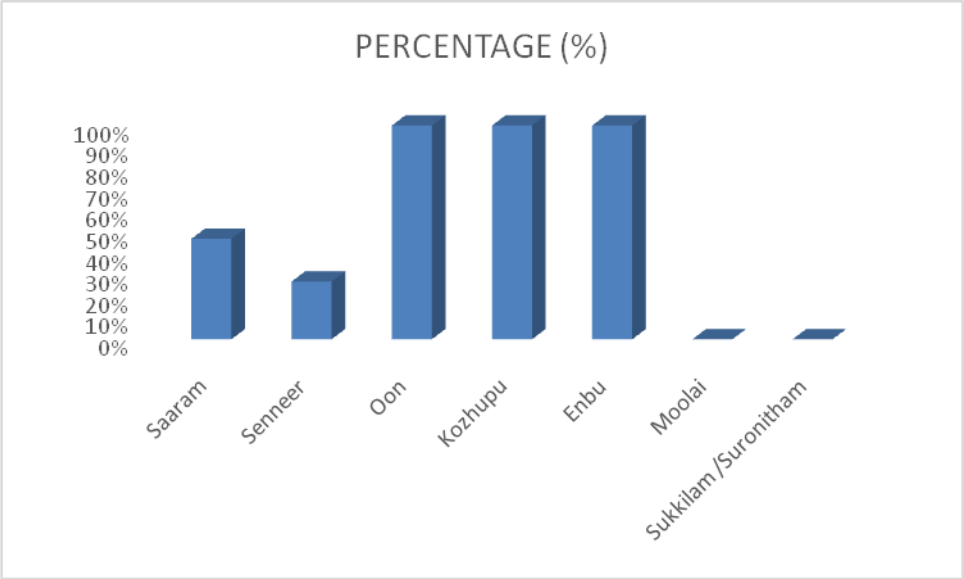


INFERENCE

Out of 60 patients, Avalambagam, kilathagam and Tharpagam was affected in 0 patients (0%), Santhigam was affected in 60 patients (100%), Potham was affected in 28 patient (47%).

7. EZHU UDAL THATHUKAL

S.No	EZHU UDAL THATHUKAL	NUMBER OF CASES	PERCENTAGE (%)
1	Saaram	28	47%
2	Senneer	16	27%
3	Oon	60	100%
4	Kozhupu	60	100%
5	Enbu	60	100%
6	Moolai	0	0%
7	Sukkilam /Suronitham	0	0%

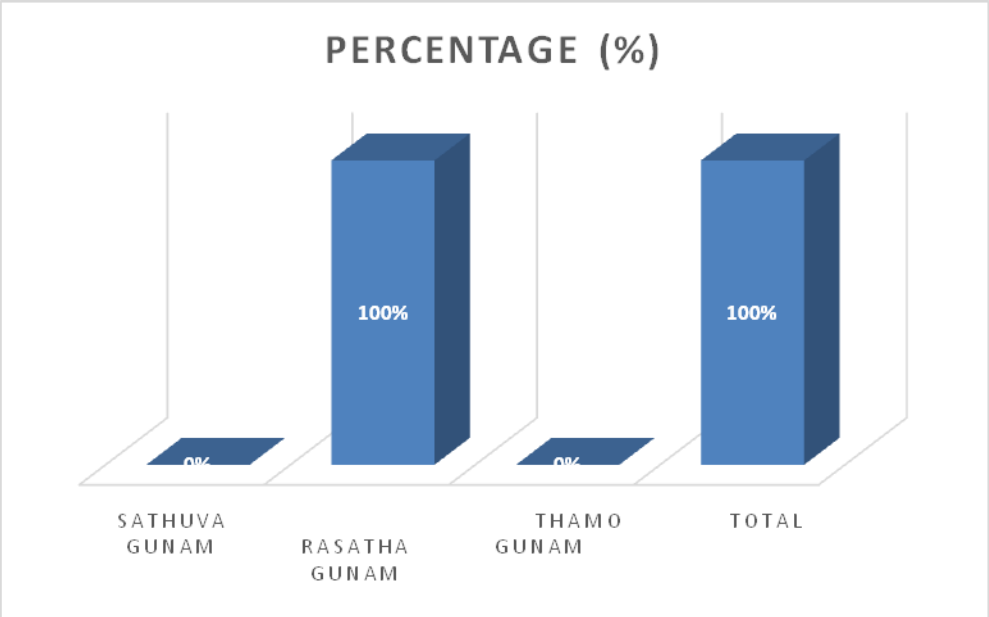


INFERENCE

Out of 60 patients, Saaram was affected in 28 patients (47%), Senneer was affected in 16 patients (27%), Kozhupu was affected in 60 patient (100%), Enbu was affected in 60 patients (100%).

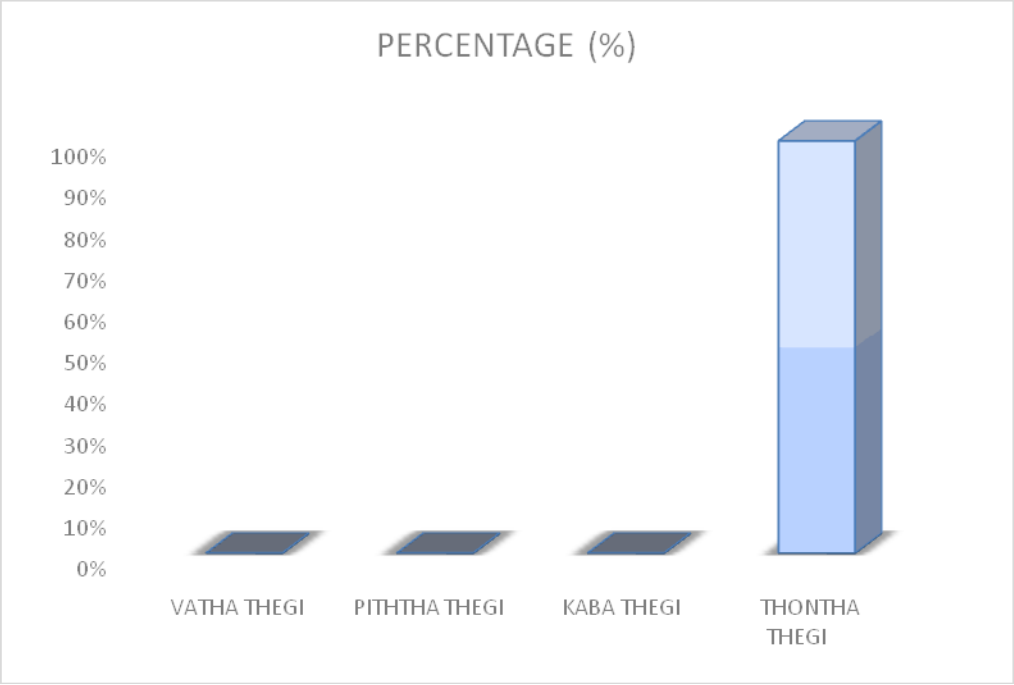
8. GUNAM

S.No	GUNAM	NUMBER OF CASES	PERCENTAGE (%)
1	Sathuva Gunam	0	0%
2	Rasatha Gunam	60	100%
3	Thamo Gunam	0	0%
4	Total	60	100%



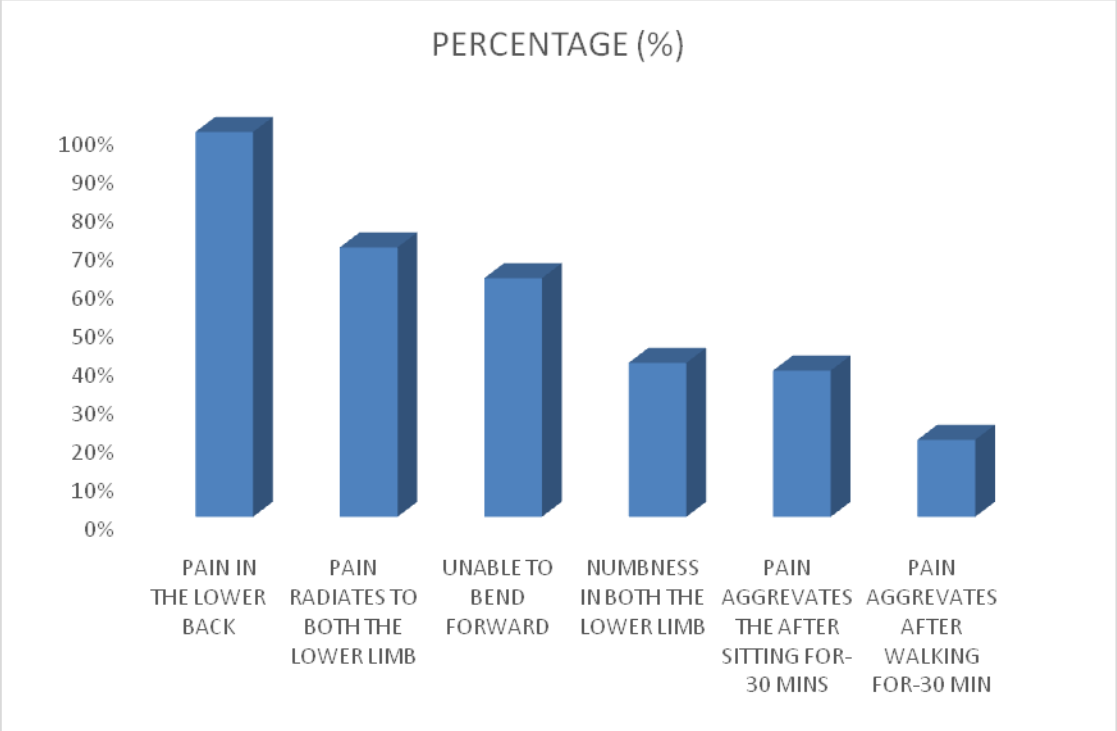
9. BODY CONSTITUTION

S.No	CONSTITUTION OF THE BODY	NUMBER OF CASES	PERCENTAGE (%)
1	VATHA THEGI	0	0%
2	PITHTHA THEGI	0	0%
3	KABA THEGI	0	0%
4	THONTHA THEGI	60	100%



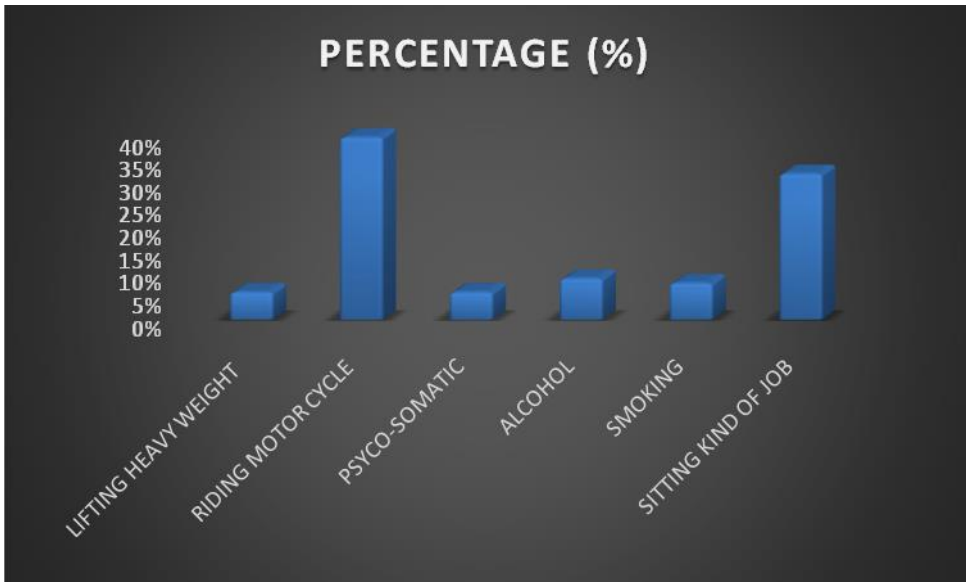
10. CLINICAL FEATURES

S.No	CLINICAL FEATURES	NUMBER OF CASES	PERCENTAGE (%)
1	PAIN IN THE LOWER BACK	60	100%
2	PAIN RADIATES TO BOTH THE LOWER LIMB	49	81%
3	UNABLE TO BEND FORWARD	36	60%
4	NUMBNESS IN BOTH THE LOWER LIMB	24	40%
5	PAIN AGGREVATES T HE AFTER SITTING FOR-30 MINS	51	85%
6	PAIN AGGREVATES AFTER WALKING FOR-30 MIN	57	95%



11. TRIGGERING FACTORS

S.No	TRIGGERING FACTORS	NUMBER OF CASES	PERCENTAGE (%)
1	LIFTING HEAVY WEIGHT	4	6%
2	RIDING MOTOR CYCLE	24	40%
3	PSYCO-SOMATIC	4	6%
4	ALCOHOL	6	9%
5	SMOKING	5	8%
6	SITTING KIND OF JOB	19	32%

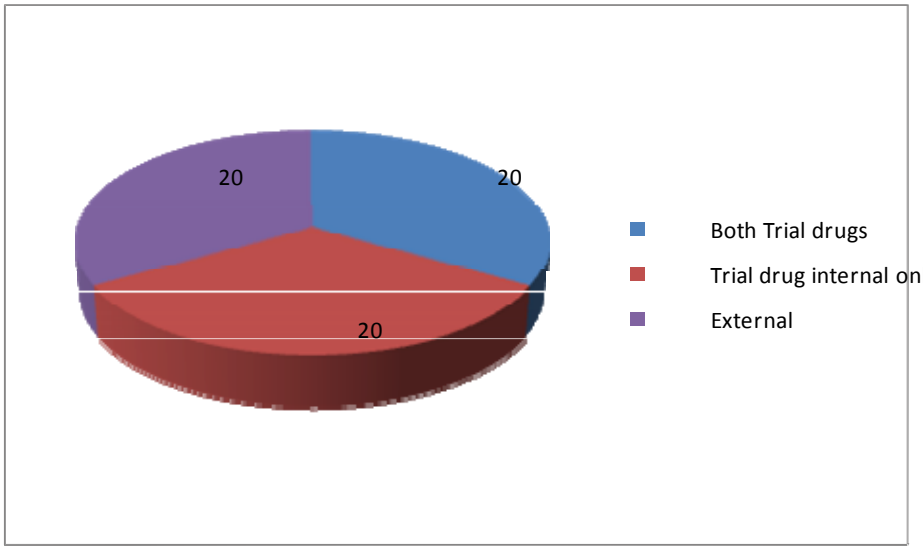


Interference:

Among 60 Patients, 8% of them had Pelvic Infection, 37% of them had Lifting heavy weight kind of Job, 3% of them Riding Motor Cycle for long distance, 10% them had Psycho-somatic ailments, 13% of them had alcohol habit, 5% of them had smoking habit, 23% of them were in Sitting kind of job.

12. SELECTION OF PATIENTS:

Sl. No	Treatment options	No of patients
1.	Both Trial drugs	20
2.	Trial drug internal only	20
3.	External	20



Observation

60 Cases were divided into III groups in such a way 20 cases in each group.

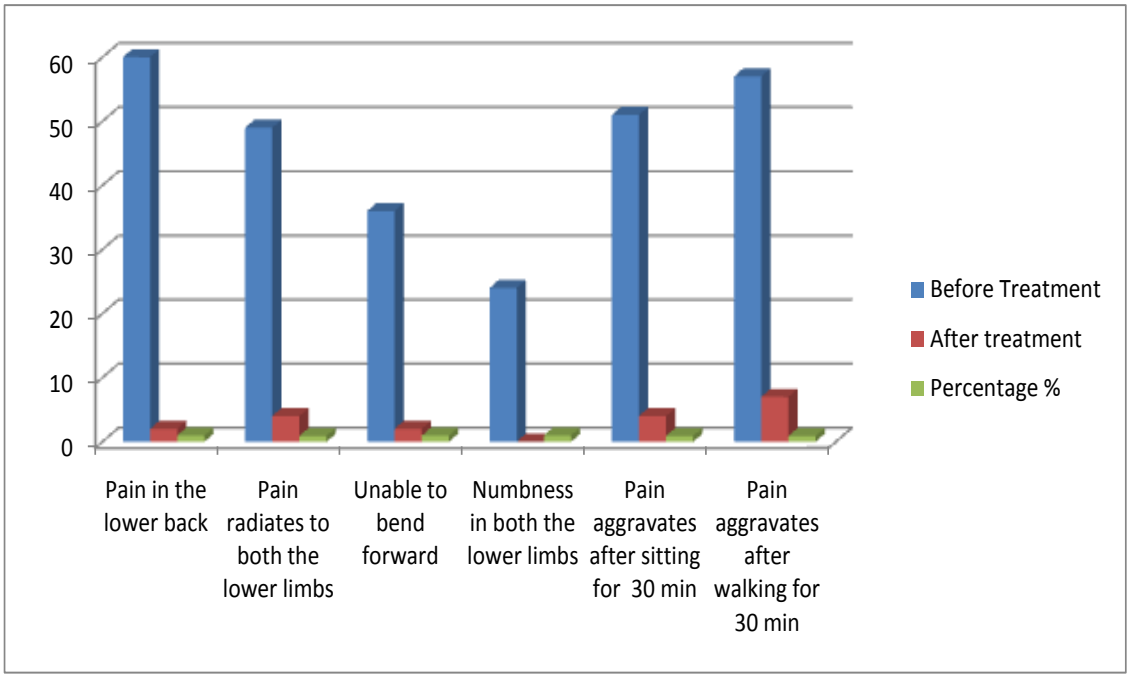
Group – I : In OPD 20 cases - moolayoga nirkundi thylam and varmam theraphy.

Group – II : In OPD 20 cases - naga chendhuram and moolayoga nirkundi thylam.

Group – III : In OPD 20 cases - under both naga chendhuram, Moolayoga nirkundi thylam. And varmam theraphy.

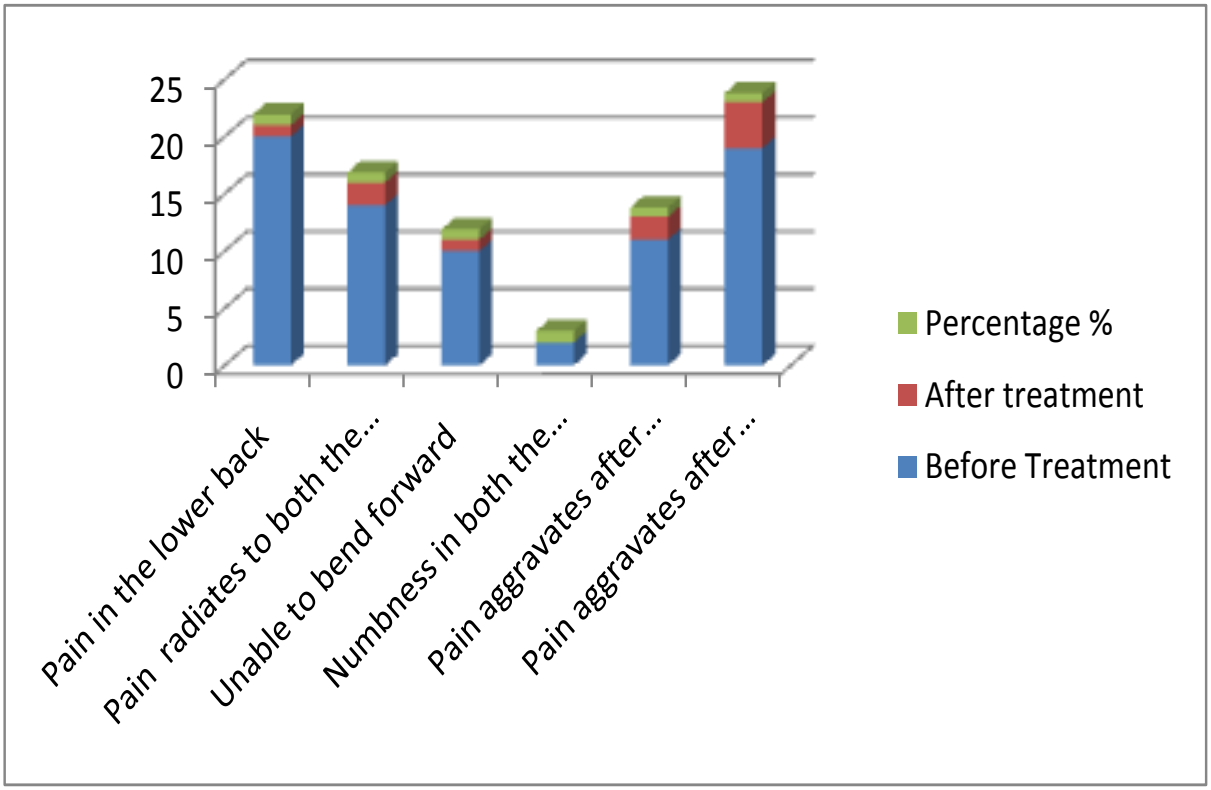
13. IMPROVEMENT IN CLINICAL FEARTURES:

S. No	Clinical features	Before Treatment	After treatment	Percentage %
1.	Pain in the lower back	60	2	96.6%
2.	Pain radiates to both the lower limbs	49	4	91.8%
3.	Unable to bend forward	36	2	94.4%
4.	Numbness in both the lower limbs	24	0	100%
5.	Pain aggravates after sitting for 30 min	51	4	92.1%
6.	Pain aggravates after walking for 30 min	57	7	87.7%



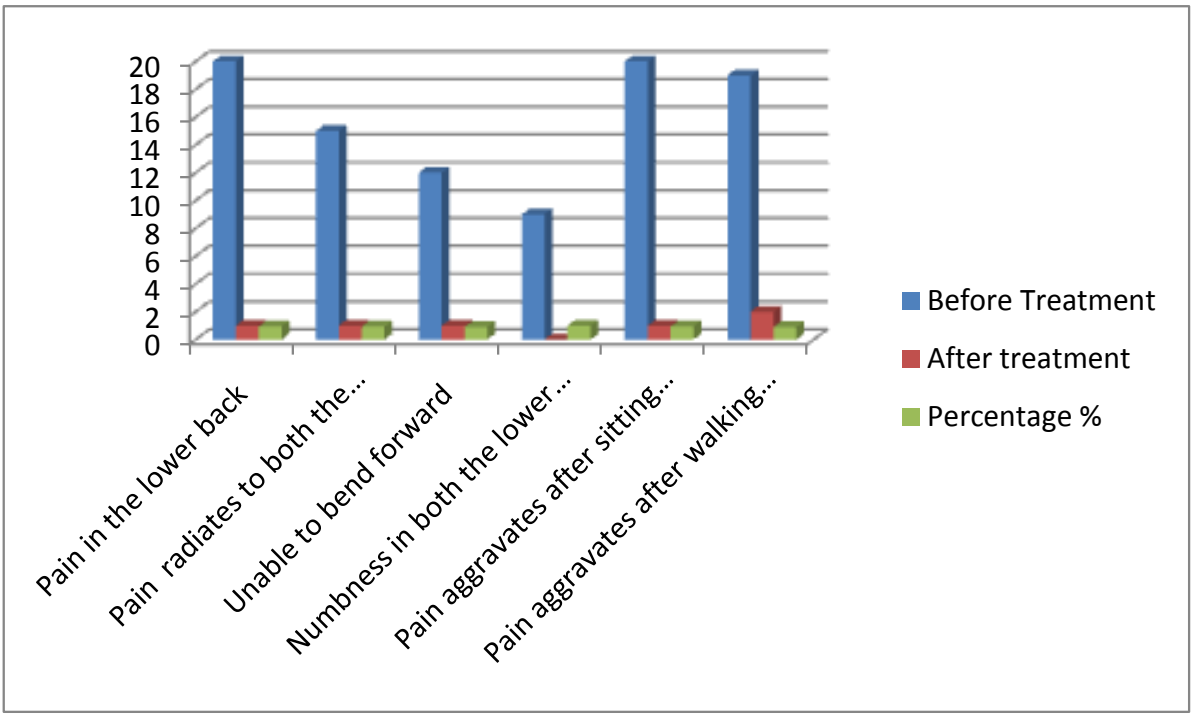
Group I (Moolayoga Nirkundi Thylam and Varmam)

S. No	Clinical features	Before Treatment	After treatment	Percentage %
1.	Pain in the lower back	20	1	95%
2.	Pain radiates to both the lower limbs	14	2	85.7%
3.	Unable to bend forward	10	1	90%
4.	Numbness in both the lower limbs	2	0	100%
5.	Pain aggravates after sitting for 30 min	11	2	81.8%
6.	Pain aggravates after walking for 30 min	19	4	78.9%



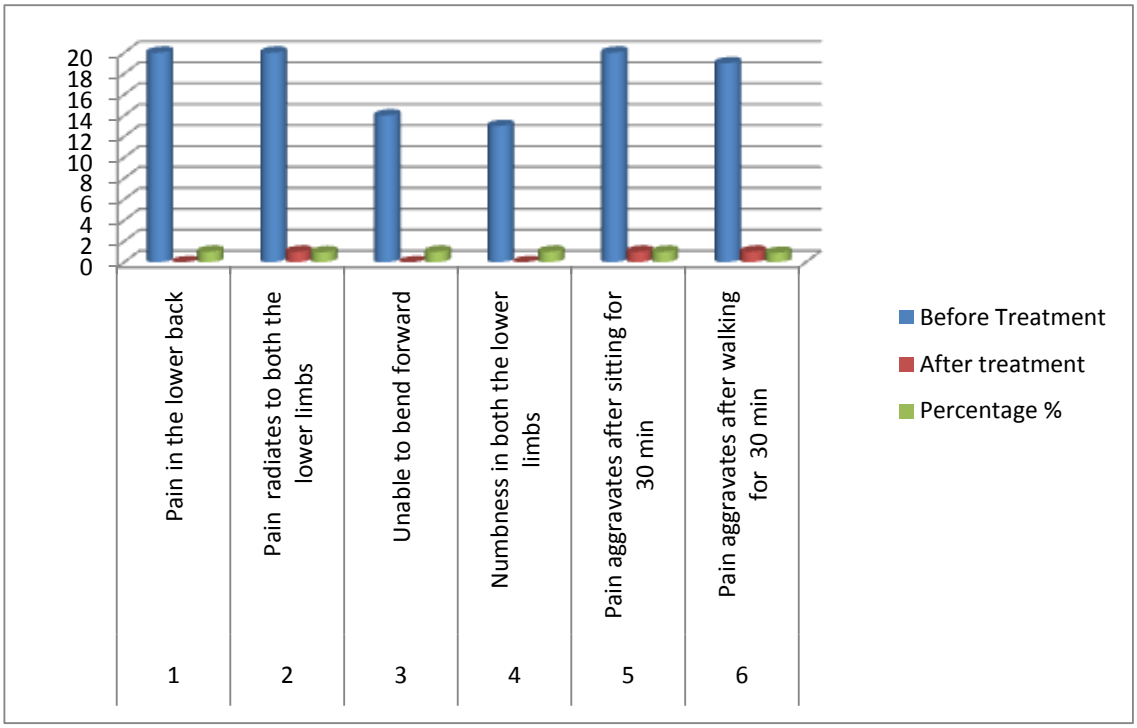
Group II (Naga chenduram and Moolayoga nirkundi thylam)

S. No	Clinical features	Before Treatment	After treatment	Percentage %
1.	Pain in the lower back	20	1	95%
2.	Pain radiates to both the lower limbs	15	1	93.3%
3.	Unable to bend forward	12	1	91.6%
4.	Numbness in both the lower limbs	9	0	100%
5.	Pain aggravates after sitting for 30 min	20	1	95%
6.	Pain aggravates after walking for 30 min	19	2	89.4%



Group III (Naga chenduram , Moolayoga nirkundi thylam and varmam)

S. No	Clinical features	Before Treatment	After treatment	Percentage %
1.	Pain in the lower back	20	0	100%
2.	Pain radiates to both the lower limbs	20	1	95%
3.	Unable to bend forward	14	0	100%
4.	Numbness in both the lower limbs	13	0	100%
5.	Pain aggravates after sitting for 30 min	20	1	100%
6.	Pain aggravates after walking for 30 min	19	1	89.4%



GROUP I (MOOLAYOGA NIRKUNDI THYLAM AND VARMAM THERAPHY)

S. No	Op no	Pain scale	Pain scale
		Before treatment	After treatment
1	3491	5	0
2	5229	7	0
3	5198	9	0
4	5199	8	0
5	5328	9	0
6	6105	9	0
7	8097	8	0
8	9704	7	0
9	9940	8	0
10	5225	9	0
11	5405	9	2
12	5624	9	0
13	5695	8	0
14	8418	8	0
15	5689	7	1
16	6289	8	0
17	6588	8	3
18	6685	7	0
19	8122	9	0
20	121	8	4

GROUP II(NAGA CHENDURAM , MOOLAYOGA NIRKUNDI THYLAM)

S. No	Op no	Pain scale Before treatment	Pain scale After treatment
1	112	7	0
2	8218	9	0
3	4262	7	0
4	6352	8	0
5	5485	8	0
6	5966	9	6
7	6973	8	0
8	7461	7	0
9	1062	7	0
10	4885	7	0
11	5680	9	0
12	6447	8	6
13	94	8	0
14	1336	6	2
15	1432	8	0
16	1416	8	0
17	1855	9	0
18	5822	7	0
19	2892	8	0
20	4399	7	0

GROUP III

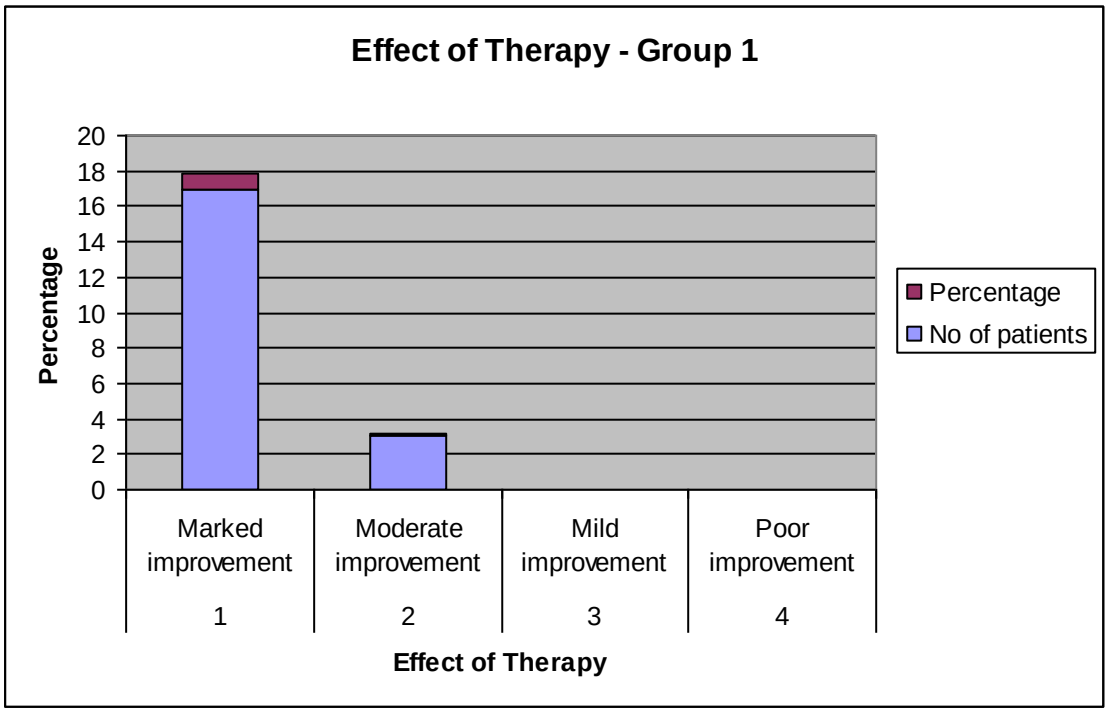
(NAGA CHENDURAM , MOOLAYOGA NIRKUNDI THYLAM AND VARMAM)

S. No	Op no	Pain scale	Pain scale
		Before treatment	After treatment
1	2365	5	0
2	2761	7	0
3	6411	9	0
4	6811	8	0
5	70	9	0
6	68	9	0
7	9936	8	0
8	1863	7	0
9	2557	8	0
10	3700	9	0
11	4648	9	2
12	4991	9	0
13	5657	8	0
14	5849	8	0
15	6634	7	1
16	8057	8	0
17	8853	8	3
18	721	7	0
19	3298	9	0
20	8755	8	4

EFFECT OF GROUP I

Effect of therapy is assessed from the above tabulated data

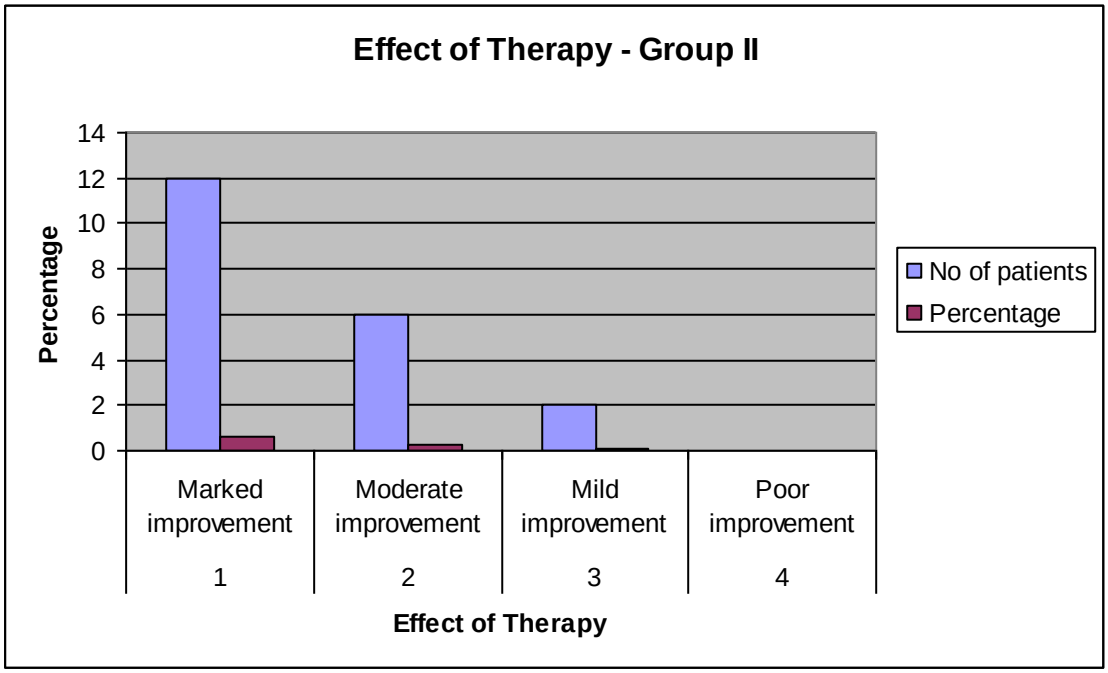
Sl. No	Effect of therapy	No of patients	Percentage
1.	Marked improvement	17	85%
2.	Moderate improvement	3	15%
3.	Mild improvement	0	0%
4.	Poor improvement	0	0%



EFFECT OF GROUP II :

Effect of therapy is assessed from the above tabulated data

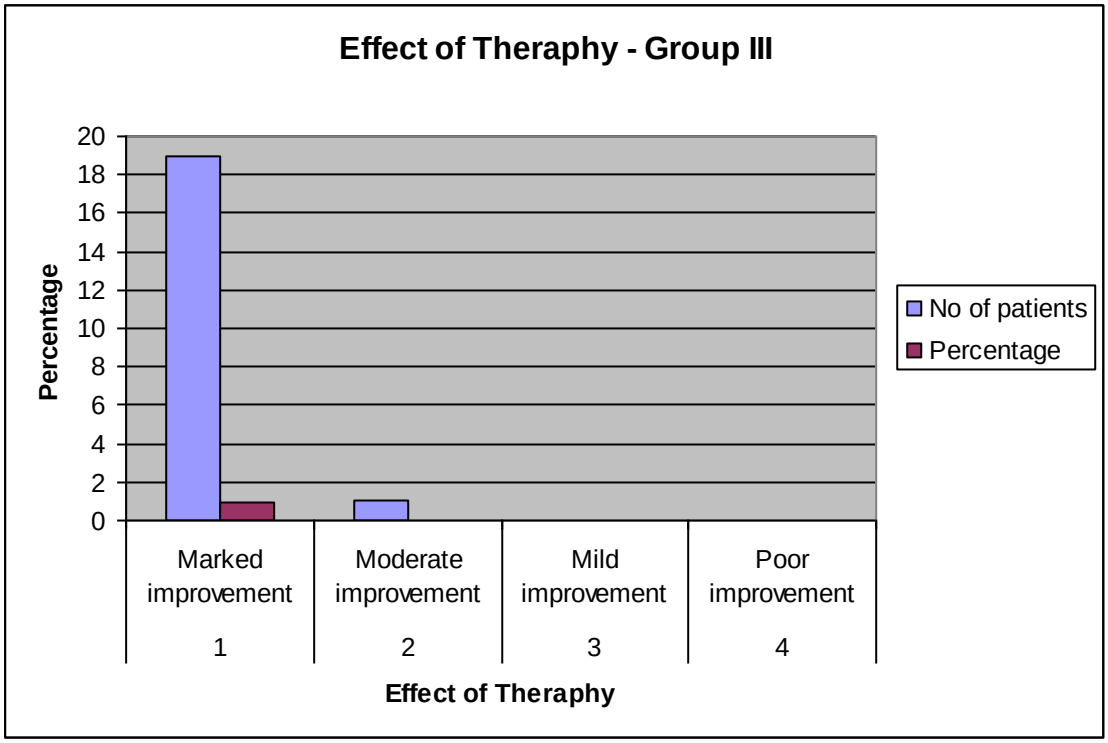
Sl. No	Effect of therapy	No of patients	Percentage
1.	Marked improvement	12	60%
2.	Moderate improvement	6	30%
3.	Mild improvement	2	10%
4.	Poor improvement	0	0%



EFFECT OF GROUP III :

Effect of therapy is assessed from the above tabulated data

Sl. No	Effect of therapy	No of patients	Percentage
1.	Marked improvement	19	95%
2.	Moderate improvement	1	5%
3.	Mild improvement	0	0%
4.	Poor improvement	0	0%



OVERALL RESULTS AFTER TREATMENT

Based on the outcome of the treatment, all the 40 patients have been classified into 4 grades. The gradation is as follows,

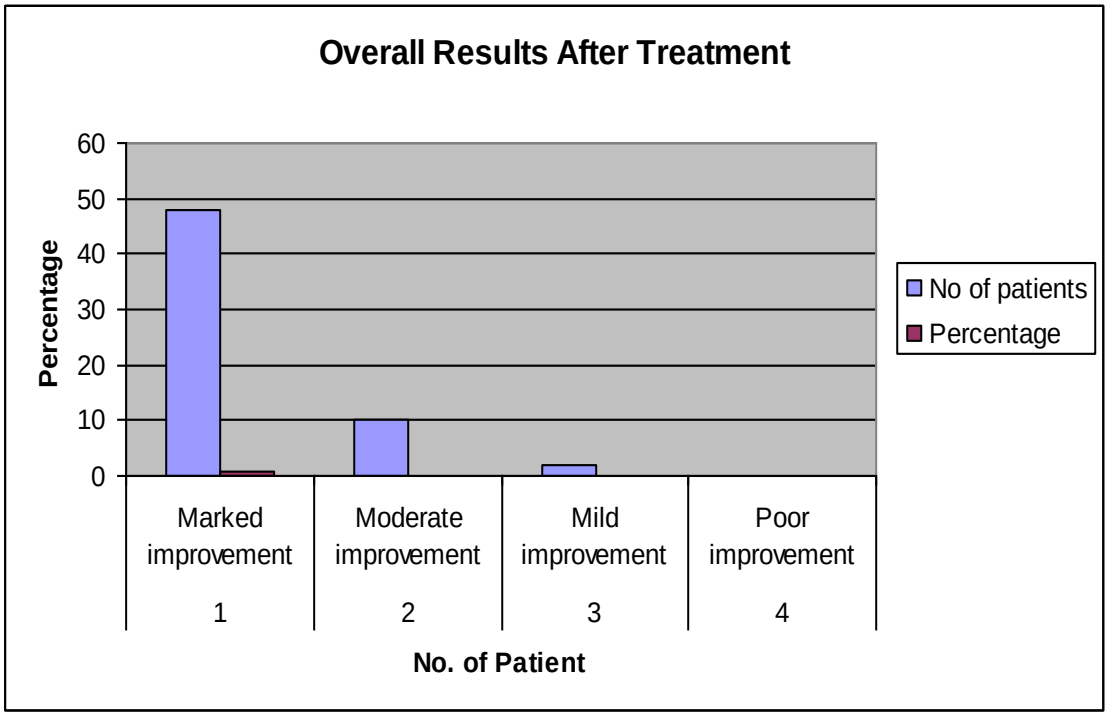
Grade I **(Marked Improvement)**

Grade II **(Moderate Improvement)**

Grade III **(Mild Improvement)**

Grade IV **(Poor improvement)**

Sl. No	Effect of therapy	No of patients	Percentage
1.	Marked improvement	48	80%
2.	Moderate improvement	10	17%
3.	Mild improvement	2	3%
4.	Poor improvement	0	0%



BEFORE AND AFTER BLOOD INVESTIGATION FOR INTERNAL CASES (Group I)

Sl. No.	IP No.	Name	Age & Sex	BT & AT	Investigation										
					Blood Investigation								Urine Investigation		
					TC Cells / Cum m	DC %			ESR (mm)		Hb gm	Sug (R) Mg/dl	AL	Sug	Dep
						P%	L %	E %	½ hr	1 hr					
1.	3491	SHANTHI	37/F	BT	8600	45	48	7	25	42	12.4	95	Nil	Nil	Nil
				AT	8600	45	47	6	23	30	10	100	Nil	Nil	Nil
2.	5229	GUNASEKAR	44/M	BT	10300	64	32	4	6	15	11.2	133	Nil	Nil	Nil
				AT	10300	63	30	7	4	10	11.5	96	Nil	Nil	Nil
3.	5198	LOGANAYAGI	55/F	BT	8800	65	30	5	23	40	12	107	Nil	Nil	Nil
				AT	8500	56	39	5	14	30	13	90	Nil	Nil	Nil
4.	5199	ANTONY	58/M	BT	5100	53	36	11	7	15	15	109	Nil	Nil	Nil
				AT	8500	51	43	6	30	12	14.6	120	Nil	Nil	Nil
5.	5328	RAVICHANTHARAN	36/M	BT	7200	64	31	5	2	5	14.1	68	Nil	Nil	Nil
				AT	8300	62	37	1	2	5	14	95	Nil	Nil	Nil
6.	6105	KALVARNIYAN	54/M	BT	9200	60	35	5	17	30	11	84	Nil	Nil	Nil
				AT	8700	59	37	4	20	11	11.4	110	Nil	Nil	Nil
7.	8097	KAMALA	55/F	BT	7300	64	30	6	42	85	14.2	90	Nil	Nil	Nil
				AT	7800	58	41	1	12	8.5	11.5	118	Nil	Nil	Nil
8.	9704	VELU	27/M	BT	9600	46	48	6	9	15	16	89	Nil	Nil	1-4 epi cells
				AT	10000	56	42	2	4	10	11.2	90	Nil	Nil	1-4 epi cells
9.	9940	Balaji	42/M	BT	8300	58	34	8	2	10	15.7	95	Nil	Nil	Nil
				AT	9600	56	40	4	6	9	12.3	112	Nil	Nil	Nil
10.	5225	VIMALA	36/F	BT	8800	64	32	4	25	40	11.2	139	Nil	Nil	Nil
				AT	8800	60	36	2	30	12	10	99	Nil	Nil	Nil
11.	5405	KAVITHA	45/F	BT	8600	45	48	7	25	42	12.4	95	Nil	Nil	Nil
				AT	8600	45	47	6	23	30	10	100	Nil	Nil	Nil
12.	5624	REVATHI	35/F	BT	10300	64	32	4	6	15	11.2	133	Nil	Nil	Nil
				AT	10300	63	30	7	4	10	11.5	96	Nil	Nil	Nil
13.	5695	JAI	35/M	BT	8800	65	30	5	23	40	12	107	Nil	Nil	Nil
				AT	8500	56	39	5	14	30	13	90	Nil	Nil	Nil
14.	8418	ESWARI	60/F	BT	5100	53	36	11	7	15	15	109	Nil	Nil	Nil
				AT	8500	51	43	6	30	12	14.6	120	Nil	Nil	Nil
15.	5689	SHARMILA	32/F	BT	7200	64	31	5	2	5	14.1	68	Nil	Nil	Nil
				AT	8300	62	37	1	2	5	14	95	Nil	Nil	Nil
16.	6289	GNANASELVAN	58/F	BT	10500	66	31	3	25	40	13.1	80	Nil	Nil	Nil
				AT	10700	59	37	4	20	11	13.4	110	Nil	Nil	Nil
17.	6588	SANKAR	45/M	BT	7300	64	30	6	42	85	14.2	90	Nil	Nil	Nil
				AT	7800	58	41	1	12	8.5	11.5	118	Nil	Nil	Nil
18.	6685	MUTHAMMAL	48/F	BT	9900	47	45	8	22	40	12.5	89	Nil	Nil	Nil
				AT	10000	56	42	2	4	10	12.7	90	Nil	Nil	Nil
19.	8122	SAKAYARAJ	43/M	BT	8300	58	34	8	2	10	15.7	95	Nil	Nil	Nil
				AT	9600	56	40	4	6	9	12.3	112	Nil	Nil	Nil
20.	121	GEETHA	43/F	BT	8800	64	32	4	25	40	11.2	139	Nil	Nil	Nil
				AT	8800	60	36	2	30	12	10	99	Nil	Nil	Nil

BEFORE AND AFTER BLOOD INVESTIGATION FOR INTERNAL CASES(Group II)

Sl. No.	IP No.	Name	Age & Sex	BT & AT	Investigation										
					Blood Investigation								Urine Investigation		
					TC Cells / Cum m	DC %			ESR (mm)		Hb gm	Sug (R) Mg/dl	AL	Sug	Dep
						P%	L %	E %	½ hr	1 hr					
1.	112	NEELAMEGAM	44/M	BT	8700	46	47	7	4	2	14.0	95	Nil	Nil	Nil
				AT	8600	45	47	6	5	2	14.4	100	Nil	Nil	Nil
2.	8218	VIMALA	36/F	BT	7300	64	32	4	6	8	11.2	133	Nil	Nil	Nil
				AT	7500	63	30	7	4	10	11.5	96	Nil	Nil	Nil
3.	4262	LEELA	58/F	BT	6400	65	30	5	23	40	12	107	Nil	Nil	Nil
				AT	7000	56	39	5	14	30	13	90	Nil	Nil	Nil
4.	6352	SUMATHI		BT	7000	63	30	3	13	21	10.6	90	Nil	Nil	Nil
				AT	7800	51	43	6	30	12	11	120	Nil	Nil	Nil
5.	5485	VIMALA	35/F	BT	7100	64	31	5	2	5	12.1	68	Nil	Nil	Nil
				AT	7800	62	37	1	2	5	12	95	Nil	Nil	Nil
6.	5966	SEKAR	48/M	BT	6400	60	35	5	17	30	13.4	84	Nil	Nil	1-4 epi cells
				AT	6500	59	37	4	20	11	13	110	Nil	Nil	1-4 epi cells
7.	6973	MANJULA	55/F	BT	6300	64	30	6	42	85	11.2	90	Nil	Nil	Nil
				AT	7000	58	41	1	12	8.5	11.5	118	Nil	Nil	Nil
8.	7461	MUNIYAMA	46/F	BT	9600	46	48	6	9	15	16	89	Nil	Nil	Nil
				AT	10000	56	42	2	4	10	11.2	90	Nil	Nil	Nil
9.	1062	MUMDHAJ	49/F	BT	8300	58	34	8	2	10	15.7	95	Nil	Nil	Nil
				AT	9600	56	40	4	6	9	12.3	112	Nil	Nil	Nil
10.	4885	SITHIRASENAN	38/M	BT	8800	64	32	4	25	40	14.2	139	Nil	Nil	Nil
				AT	8800	60	36	2	30	12	14	99	Nil	Nil	Nil
11.	5680	PUVANESHWARI	52/F	BT	8600	45	48	7	25	42	12.4	95	Nil	Nil	Nil
				AT	8600	45	47	6	23	30	10	100	Nil	Nil	Nil
12.	6447	RANI	56/F	BT	21310	56	34	2	6	15	14.2	122	Nil	Nil	Nil
				AT	20100	57	32	5	4	10	13.3	110	Nil	Nil	Nil
13.	94	JAYARAMAN	50/M	BT	6220	59	30	1	23	40	15	107	Nil	Nil	1-3 pus cells
				AT	6500	56	39	5	14	30	13	90	Nil	Nil	1-3 pus cells
14.	1336	MUNIRBATSHA	40/M	BT	5100	53	36	11	7	15	15	109	Nil	Nil	Nil
				AT	8500	51	43	6	30	12	14.6	120	Nil	Nil	Nil
15.	1432	PRAMILA	50/F	BT	7200	64	31	5	2	5	14.1	68	Nil	Nil	Nil
				AT	8300	62	37	1	2	5	14	95	Nil	Nil	Nil
16.	1416	RANI	52/F	BT	10500	66	31	3	25	40	13.1	80	Nil	Nil	Nil
				AT	10700	59	37	4	20	11	13.4	110	Nil	Nil	Nil
17.	1855	KANAMAI	37/F	BT	8700	64	30	6	42	85	14.2	90	Nil	Nil	Nil
				AT	7800	58	41	1	12	8.5	11.5	118	Nil	Nil	Nil
18.	5822	SATHYAIYAN	53/M	BT	11200	47	45	8	22	40	12.5	89	Nil	Nil	Nil
				AT	10000	56	42	2	4	10	12.7	90	Nil	Nil	Nil
19.	2892	JAYARAMAN	50/M	BT	7900	58	34	8	2	10	15.7	95	Nil	Nil	Nil
				AT	7600	56	40	4	6	9	12.3	112	Nil	Nil	Nil
20.	4399	SANKARI	60/F	BT	4800	64	32	4	25	40	11.2	139	Nil	Nil	Nil
				AT	5000	60	36	2	30	12	10	99	Nil	Nil	Nil

BEFORE AND AFTER BLOOD INVESTIGATION FOR INTERNAL CASES (Group III)

Sl. No.	IP No.	Name	Age & Sex	BT & AT	Investigation										
					Blood Investigation								Urine Investigation		
					TC Cells / Cum m	DC %			ESR (mm)		Hb gm	Sug (R) Mg/dl	AL	Sug	Dep
						P%	L %	E %	½ hr	1 hr					
1.	3226	MANJULA	40/F	BT	8900	55	41	5	10	20	13	98	Nil	Nil	1-4 pus cells
				AT	8200	54	43	3	3	6	13	110	Nil	Nil	1-4 pus cells
2.	3589	VANATHI	58/F	BT	8100	57	40	3	10	22	10	109	Nil	Nil	Nil
				AT	8000	54	41	4	2	4	10.5	95	Nil	Nil	1-2 epi cells
3.	3526	MEENA	50/F	BT	7400	56	39	5	26	50	8.8	118	Nil	Nil	1-2 epi cells
				AT	7000	55	38	4	9	14	9.5	110	Nil	Nil	Nil
4.	3551	MADHAVI	50/F	BT	8500	68	26	6	15	35	11.2	70	Nil	Nil	Nil
				AT	8000	60	32	3	4	12	11.6	85	Nil	Nil	Nil
5.	3847	MOHAMED KASIM	34/M	BT	8900	55	41	4	15	28	12.4	94	Nil	Nil	2-3 pus cells
				AT	8000	54	40	4	15	20	11	110	Nil	Nil	Nil
6.	4380	VALARMATHI	47/F	BT	7800	44	51	5	8	15	13.6	82	Nil	Nil	Nil
				AT	8000	45	40	3	6	12	13.6	82	Nil	Nil	Nil
7.	4468	JANARTHANAN	41/M	BT	9000	66	30	4	10	24	10.4	119	Nil	Nil	1-2 epi cells
				AT	8000	54	36	5	5	10	12.6	120	Nil	Nil	
8.	4307	JAYANTHI	44/F	BT	9700	63	30	7	50	72	10.6	82	Nil	Nil	1-2 epi cells
				AT	8800	60	36	2	2	4	10	99	Nil	Nil	Nil
9.	4799	MANGALALAKMI	44/F	BT	10200	68	27	5	6	16	12.8	97	Nil	Nil	1-4 pus cells
				AT	8000	62	34	4	3	6	13	94	Nil	Nil	Nil
10.	4878	MEENA	58/F	BT	8400	61	32	7	26	38	13	83	Nil	Nil	2-3 pus cells
				AT	7000	56	40	4	5	4	13.4	90	Nil	Nil	2-3 pus cells
11.	5022	PUSHPA	58/F	BT	7200	49	45	6	20	44	9.6	93	Nil	Nil	Nil
				AT	8000	54	43	3	18	9	10	110	Nil	Nil	Nil
12.	835	CHITHARA	45/F	BT	7980	58	28	5	12	27	13.1	120	Nil	Nil	6-8epi cells
				AT	8000	63	30	7	4	10	11.5	96	Nil	Nil	2-3epi cells
13.	1815	GOWSALA	60/F	BT	8500	60	37	3	2	6	12.5	77	Nil	Nil	Nil
				AT	8500	56	39	5	32	11	13	90	Nil	Nil	Nil
14.	6738	SATHYABAMA	36/F	BT	7200	52	43	5	5	16	12.6	170	Nil	Nil	Nil
				AT	8500	51	43	6	30	12	12.6	120	Nil	Nil	Nil
15.	9290	SHANTHI	38/F	BT	8400	54	41	5	10	18	11	74	Nil	Nil	Nil
				AT	8300	62	37	1	30	10	11.5	95	Nil	Nil	Nil
16.	7373	NASIYA	34/F	BT	9200	60	35	5	17	30	11	84	Nil	Nil	1-2 epi cells
				AT	8700	59	37	4	20	11	11.4	110	Nil	Nil	1-2 epi cells
17.	5240	PRAMILA	47/F	BT	7800	56	40	4	32	8	10	108	Nil	Nil	Nil
				AT	7800	58	41	1	12	8.5	11.5	118	Nil	Nil	Nil
18.	9578	VALARMATHI	50/F	BT	9500	59	38	3	18	9	11	82	Nil	Nil	Nil
				AT	10000	56	42	2	4	10	11.2	90	Nil	Nil	Nil
19.	9587	TAMIL ARASI	40/F	BT	7500	60	34	6	15	58	9	109	Nil	Nil	Nil
				AT	9600	56	40	4	6	9	12.3	112	Nil	Nil	Nil
20.	524	DHILIBAI	45/F	BT	9400	53	37	4	26	39	9.4	83	Nil	Nil	Nil
				AT	9100	60	36	2	30	12	10	99	Nil	Nil	Nil

LFT & RFT FOR GROUP III(NAGA CHENDURAM , MOOLAYOGA NIRKUNDI THYLAM AND VARMAM)

		LFT								RFT			
		BEFORE TREATMENT				AFTER TREATMENT				BEFORE TREATMENT		AFTER T REATMENT	
S. NO	**OP. NO**	**SGOT**	**SGPT**	**TOTAL PROTEINS**	**TOTAL BILIRUBIN**	**SGOT**	**SGPT**	**TOTAL PROTEINS**	**TOTAL BILIRUBIN**	**UREA**	**CREATININE**	**UREA**	**CREATIN INE**
1	112	25	44	6.4	0.3	28	48	6.9	0.6	23	0.5	22	0.5
2	8218	35	36	6.3	0.8	38	40	6.7	0.7	24	0.3	22	0.3
3	4262	18	18	6.9	0.6	18	18	7.1	0.7	35	0.8	26	0.5
4	6352	24	42	6.9	0.6	29	46	7.1	0.7	26	0.5	24	0.4
5	5485	32	38	6.8	0.9	35	44	7.1	1.0	24	0.5	21	0.5
6	5966	21	25	7.4	0.4	25	28	7.6	0.7	28	0.5	24	0.5
7	6973	26	37	7.2	0.4	28	40	7.6	0.6	28	0.4	28	0.3
8	7461	31	42	7.1	0.3	35	36	7.4	0.4	25	0.6	22	0.6
9	1062	36	32	6.9	0.9	38	38	6.5	0.8	24	0.5	26	0.5
10	4885	28	46	6.9	0.9	31	24	6.5	0.8	19	0.6	14	0.8
11	5680	18	48	6.9	0.9	25	50	6.8	0.7	22	0.5	30	0.5
12	6447	58.6	100	8.35	1.48	56	100	6.9	1.40	31.2	0.60	28	0.30
13	94	15.2	19.3	6.4	0.98	14.8	48	6.5	1.0	26	0.89	24	0.80
14	1336	25	42	7.4	0.4	29	46	7.6	0.6	27	0.7	24	0.5
15	1432	28	38	7.4	0.8	20	32	7.6	0.6	33	0.5	30	0.5
16	1416	35	30	7.2	0.4	21	25	7.4	0.5	29	0.7	23	0.9
17	1855	36	32	6.1	0.9	38	28	6.4	0.8	24	0.5	30	0.4
18	5822	28	40	7.3	0.8	32	48	7.6	0.5	28	0.5	27	0.5
19	2892	24	27	7.1	0.6	29	25	7.4	0.7	26	0.4	24	0.4
20	4399	32	37	7.0	0.8	35	39	7.2	0.9	31	0.5	32	0.5

LFT & RFT FOR GROUP III(NAGA CHENDURAM , MOOLAYOGA NIRKUNDI THYLAM

		LFT								RFT			
		BEFORE TREATMENT				AFTER TREATMENT				BEFORE TREATMENT		AFTER TREATMENT	
S NO	**OP NO**	**SGOT**	**SGPT**	**TOTAL PROTEINS**	**TOTAL BILIRUBIN**	**SGOT**	**SGPT**	**TOTAL PROTEINS**	**TOTAL BILIRUBIN**	**UREA**	**CREATININE**	**UREA**	**CREATININE**
1	3226	25	44	6.5	0.4	28	48	6.8	0.6	21	0.5	22	0.5
2	3589	35	36	6.7	0.3	38	40	6.8	0.6	19	1.0	20	0.4
3	3526	29	41	6.9	0.9	34	45	6.8	0.8	35	0.7	23	0.5
4	3551	28	42	7.4	0.8	29	46	7.1	0.7	30	0.8	24	0.4
5	3847	32	38	7.2	0.9	35	44	7.4	1.0	23	0.5	21	0.5
6	4380	21	25	7.4	0.8	25	28	7.2	0.6	22	0.5	24	0.5
7	4468	26	37	7.4	0.6	28	40	7.8	0.5	23	0.3	28	0.3
8	7461	31	42	7.6	0.5	35	36	6.8	0.3	33	0.5	22	0.5
9	5680	36	32	6.4	0.3	38	38	6.7	0.5	27	0.5	26	0.5
10	6447	28	46	6.2	0.5	32	40	6.4	0.4	26	0.5	20	0.5
11	94	18	48	7.4	0.4	25	50	7.2	0.6	26	0.5	30	0.5
12	835	30.5	32.9	8.04	0.86	20	29	7.9	1.0	14.7	0.57	15	0.3
13	1815	14.5	9.8	7.3	0.27	14.5	10	7.1	0.37	17.6	0.67	18	0.8
14	6738		42	6.6	0.4	29	46	6.2	0.8	18	0.4	24	0.5
15	9290	28	38	6.5	0.8	20	32	6.9	0.5	28	0.5	30	0.5
16	7373	35	30	6.4	0.8	38	34	6.2	0.4	32	0.5	30	0.5
17	5240	36	32	6.7	0.8	38	28	7.1	0.6	28	0.7	30	0.4
18	9578	28	40	6.4	0.4	32	48	6.2	0.8	28	0.5	27	0.5
19	9587	24	27	6.5	1.0	16	13	6.7	1.0	28	0.4	16	1.0
20	524	21.2	16.1	6.8	0.47	15.3	15.2	7.1	0.37	10.6	0.58	10	0.5

STATISTICAL ANALYSIS

CLINICAL PROGNOSIS

Treatment for : THANDAGAVATHAM

The most popular non parametric statistical tool, namely, McNemar Test analysis has been employed to analyses the effectiveness with the help of a hypothesis.

S. No	Clinical features	Before Treatment	After Treatment
		n%	n%
1.	Pain in the lower back	60(100)	2(3.5)**
2.	Pain radiates to both the lower limbs	49(79)	4(7)**
3.	Unable to bend forward	36(60)	2(3.5)**
4.	Numbness in both the lower limbs	24(40)	0(0)**
5.	Pain aggravates after sitting for 30 min	51(85)	4(7)**
6.	Pain aggravates after walking for 30 min	57(95)	7(12)**

Mc Nemat test, C.I: 95%, *P<0.05; **P<0.01

Software: spss17 version

Number of cases: 60

Inference:

Since the p value is significant in all clinical features. So there is significant reducing of clinical features among the patients for the treatment of Thandagavatham. Hence it is concluded that the treatment was effective and **significant.**

Treatment for Disease Name:

The most popular non parametric statistical tool, namely, McNemar Test analysis has been employed to analyses the effectiveness with the help of a hypothesis.

Group I (Moolayoga Nirkundi Thylam And Varmam)

S. No	Clinical features	Before Treatment	After Treatment
		n%	n%
1.	Pain in the lower back	20(100)	1(5)**
2.	Pain radiates to both the lower limbs	14(70)	2(10)**
3.	Unable to bend forward	10(50)	1(5)**
4.	Numbness in both the lower limbs	2(10)	0(0)*
5.	Pain aggravates after sitting for 30 min	11(55)	2(10)**
6.	Pain aggravates after walking for 30 min	19(95)	4(20)**

McNemat test, C.I: 95%, *P<0.05; **P<0.01

Software: spss17 version

Number of cases: 20

Inference:

Since the p value is significant in all clinical features. So there is significant reducing of clinical features among the patients for the treatment of Thandaga vatham. Hence it is concluded that the treatment was effective and **significant.**

Treatment for Disease Name:

The most popular non parametric statistical tool, namely, McNemar Test analysis has been employed to analyses the effectiveness with the help of a hypothesis.

Group II (Naga Chenduram And Moolayoga Nirkundi Thylam)

S. No	Clinical features	Before Treatment	After Treatment
		n%	n%
1.	Pain in the lower back	20(100)	1(5)**
2.	Pain radiates to both the lower limbs	15(75)	1(5)**
3.	Unable to bend forward	12(60)	1(5)**
4.	Numbness in both the lower limbs	9(45)	0(0)**
5.	Pain aggravates after sitting for 30 min	20(100)	1(5)**
6.	Pain aggravates after walking for 30 min	19(95)	2(10)**

McNemat test, C.I: 95%, *P<0.05; **P<0.01

Software: spss17 version

Number of cases: 20

Inference:

Since the p value is significant in all clinical features. So there is significant reducing of clinical features among the patients for the treatment of Thandaga vatham. Hence it is concluded that the treatment was effective and **significant.**

Group III (Naga Chenduram, Moolayoga Nirkundi Thylam And Varmam)

S. No	Clinical features	Before Treatment	After Treatment
		n%	n%
1.	Pain in the lower back	20(100)	9(45)**
2.	Pain radiates to both the lower limbs	20(100)	1(5)**
3.	Unable to bend forward	14(70)	0(0)**
4.	Numbness in both the lower limbs	13(65)	0(0)**
5.	Pain aggravates after sitting for 30 min	20(100)	1(5)**
6.	Pain aggravates after walking for 30 min	19(95)	1(5)**

McNemat test, C.I: 95%, *P<0.05; **P<0.01

Software: spss17 version

Number of cases: 20

Inference:

Since the p value is significant in all clinical features. So there is significant reducing of clinical features among the patients for the treatment of Thandaga vatham. Hence it is concluded that the treatment was effective and **significant.**

LFT For Group III(Naga Chenduram , Moolayoga Nirkundi Thylam And Varmam)

S.No.	Investigations	Before Treatment Mean±SD n= 20	After Treatment Mean±SD n= 20	P value
1	SGPT	38.66±16.65	40.15±17.07	**0.479**
2	SGOT	28.79±9.34	30.24±9.07	**0.196**
3	Total Proteins	6.99±0.49	7.09±0.42	**0.479**
4	Total bilirubin	0.70±0.29	0.73±0.22	**<0.001**

C.I: 95%; Paired samples t test. Where p<0.001, p<0.05 represents statistically significant.

LFT For Group III (Naga Chenduram , Moolayoga Nirkundi Thylam)

S.No.	Investigations	Before Treatment Mean±SD n= 20	After Treatment Mean±SD n= 20	P value
1	SGPT	34.94±9.74	35.51±11.94	**0.651**
2	SGOT	27.71±5.90	28.49±7.93	**0.482**
3	Total Proteins	6.91±0.50	6.92±0.47	**0.967**
4	Total bilirubin	0.61±0.23	0.62±0.21	**0.816**

C.I: 95%; Paired samples t test. Where $p<0.001$, $p<0.05$ represents statistically significant.

RFT For Group III (Naga Chenduram, Moolayoga Nirkundi Thylam And Varmam)

S.No.	Investigations	Before Treatment Mean±SD n= 20	After Treatment Mean±SD n= 20	P value
1	Urea	26.66±3.88	25.05±4.11	**0.074**
2	Creatinine	0.54±0.14	0.51±0.16	**0.181**

C.I: 95%; Paired samples t test. Where $p<0.001$, $p<0.05$ represents statistically significant.

RFT For Group III (Naga Chenduram , Moolayoga Nirkundi Thylam)

S.No.	Investigations	Before Treatment Mean±SD n= 20	After Treatment Mean±SD n= 20	P value
1	Urea	24.49±6.32	23.00±5.52	**0.224**
2	Creatinine	0.55±0.15	0.50±0.15	**0.347**

C.I: 95%; Paired samples t test. Where $p<0.001$, $p<0.05$ represents statistically significant.

S.No.	BT PAIN Scale	AT PAIN Scale
1	5	0
2	7	0
3	9	0
4	8	0
5	9	0
6	9	0
7	8	0
8	7	0
9	8	0
10	9	0
11	9	2
12	9	0
13	8	0
14	8	0
15	7	1
16	8	0
17	8	3
18	7	0
19	9	0
20	8	4

Software: spss17 version

Variables: PAIN Scale – before treatment, after treatment

Number of cases: 20

Test: Paired t test

Confidence Interval: 95%

Correlation coefficient (r): 0.46

Before and after treatment mean difference: 7.50 ± 1.50.

P Value (2 tailed): $p<0.001$.

Inference:

Since the P value is highly significant (<0.001). So there is significant reducing of PAIN Scale among the patients for the treatment of Thandaga Vatham . Hence it is concluded that the treatment was effective **and significant.**

S.No.	BT PAIN Scale	AT PAIN Scale
1	7	0
2	9	0
3	7	0
4	8	0
5	8	0
6	9	6
7	8	0
8	7	0
9	7	0
10	7	0
11	9	0
12	8	6
13	8	0
14	6	2
15	8	0
16	8	0
17	9	0
18	7	0
19	8	0
20	7	0

Software: spss17 version

Variables: PAIN Scale – before treatment, after treatment

Number of cases: 20

Test: Paired t test

Confidence Interval: 95%

Correlation coefficient (r): 0.82

Before and after treatment mean difference: 7.05 ± 1.90.

P Value (2 tailed): $p<0.001$.

Inference:

Since the P value is highly significant (<0.001). So there is significant reducing of PAIN Scale among the patients for the treatment of Thandaga vatham. Hence it is concluded that the treatment was effective **and significant.**

S.No.	BT PAIN Scale	AT PAIN Scale
1	5	0
2	7	0
3	9	0
4	8	0
5	9	0
6	9	0
7	8	0
8	7	0
9	8	0
10	9	0
11	9	2
12	9	0
13	8	0
14	8	0
15	7	1
16	8	0
17	8	3
18	7	0
19	9	0
20	8	4

Software: spss17 version

Variables: PAIN Scale – before treatment, after treatment

Number of cases: 20

Test: Paired t test

Confidence Interval: 95%

Correlation coefficient (r): 0.470

Before and after treatment mean difference: 7.50 ± 1.50.

P Value (2 tailed): $p<0.001$.

Inference:

Since the P value is highly significant (<0.001). So there is significant reducing of PAIN Scale among the patients for the treatment of Thandaga vatham. Hence it is concluded that the treatment was effective **and significant.**

DISCUSSION

Low back ache is a very common problem and has a ubiquitous distribution. Among the galaxy of causative factors both spinal and extra spinal, the common cause of low backache seems to be the lumbar disc disease. Bad posture plays a very significant role in the genesis of this disease.[e]This is a degenerative disorder of the lumbar spine characterised clinically by an insidious onset of pain and stiffness and radiologically by osteophyte formation.

The retrospective review of the disease Thandaga vaatham mentioned in Siddha literatures begins from the correlation of it to the signs and symptoms of the disease lumbar spondylosis. The drugs which possess anti-vaatha property as mentioned in Siddha literature were selected and the trial drugs were prepared by the Author in the Gunapadam practical laboratory of Goverment Siddha Medical College, after getting proper authentication of raw drugs from the Medicinal Botany Department under the supervision of the members of the teaching faculty and guided by the Head of the Department of Sirappu Maruthuvam of the Goverment Siddha Medical College, Chennai – 106

60 patients of both genders were recruited for this study. Among 60 patients, 20 patients were treated with Varmam treatment along with the External trial drugs, 20 patients trial Medicine and External trial drugs and remaining 20 patients Varmam, External trial drugs trial Medicine

The patients were examined based on Siddha and as well as modern aspects. All the necessary investigations were made during the study. The results obtained from their studies were discussed below for better conclusion.

AGE DISTRIBUTION:

Majority of the case that is 43% were in the 4th decade, 30% were in the 5 decade, 27% were in the 3rd decade. This present study reports coincides with the recent incidence that indicates that the onset is most frequent during third,fourth and fifth decades of life .About 80% of all patients developing this disease between the ages 30 - 50.

SEX DISTRIBUTION :

Among the 60 patients selected for this study, 30 % were males and 70 % were females. This indicates the prevalence of this disease more in females.

OCCUPATIONAL STATUS :

Mixed categories of people are affected, from housewife to office worker. Occupation of the patients is also an the impotant cause for the lumbar spondylosis. The study revealed that out of 60 patients, 40 % of them were homemakers,23.3% of them are Computer Based Job and tailors. 36.6% of them are others (Cooli, Business, Teacher, Engineer).This reveals that prolong sitting, weight bearing leads to lumbar pain.

SOCIO ECONOMIC STATUS:

The reported patients the datas revealed that 17.5% of the patients were from low income group , 62.5% of them from middle income group and only 20% of them came from high income group (table3),this condition invariably affects all socio economic groups.

CHRONICITY OF ILLNESS:

In 35% of the patients duration of illness is between 1 months to 1 year. 26.6% of the patients had duration of 1-2years .20% of the patients had duration of 2-5 years 20% in 5-10 years,16.6%in 10 years(table 14). The clinical study reveals that the onset is gradual in 90% of the patients and sudden in 10% of patients.

NAADI:

Examination in all the 60 patients showed that vathapitham naadi was felt in 75% of the cases, 20% of them had Pithavatham naadi,5% of the cases had pitha kabam

THINAI DISTRIBUTION:

The statistical data of this study reveals that 87.5% of the patients reported from Neithal thinai and 12.5% of them were from Marutham Thinai (Table 7). Siddha literatures say Vatham diseases are more prevalent in Neithal Thinai.=

KAALAM DISTRIBUTION:

Out of 60 patients, 60 were reported in pitha kaalam

DIET HABIT.

Among 20 patients, 14 patients eat vegetarian food and others eat mixed diet. Diet doesn't seem to possess any influence over the disease.

On clinical manifestations:

All of my patients had pain in lumbar region, 81% patient had Pain radiates to both the lower limbs.

Mukkutram:

Vadham

Among the 60 cases Abanan - 80% affected Samanan and Viyanan were affected in all the cases.

Pitham

Ranjagam was found affected in 27% of cases, Anarpitham was affected in 47% the cases.

Kabam:

Avambagam -100 Pothagam were found to be affected in 47% f the cases and then sathagam were found to be affected in 100%of the cases.

UDAL KATTUGAL:

Among the 60 patients, Oon, Kozhupu, Enbu were affected in all the 100% cases, Saaram was affected in 47% cases and Senner was affected in 28% cases.

RADIOGRAPHIC STUDIES

The radiographic studies of the cases showed narrowed joint space and presence of osteophytes. The trial drug showed improvement in prognosis of the disease clinically.

The total study showed that out of the 60 patients (55% of the patients had good improvement in the clinical assessment, 27.5% of them had moderate improvement, 17.5% of them had mild improvement.

SUMMARY

I have to summarize this study with the following highlights. The 60 case of Thandagavatham were diagnosed clinically. Among 60 patients, 20 patients were treated with Varmam treatment along with the External trial drugs, 20 patients trial Medicine and External trial drugs and remaining 20 patients Varmam, External trial drugs trial Medicine in outpatient for 48 days in Department of Sirappu Maruthuvam of the Government Siddha Medical College, Chennai – 106

The Study Protocol was approved by Institutional Ethics committee (GSMC-CH-ME-2015/015).Before initiating the clinical trial, it was registered in Clinical Trials Registry of India and the registration number Ref No Is: CTRI/2017/05/008542.

The various Siddha methods of examination of the disease were carried out and the data were recorded in the prescribed Proforma for the 60 selected cases.

During the period of treatment all the patients are advised for Pathiyam (specific dietary regimen chart for the disease given to each patient.

Laboratory investigations are done periodically for all the cases before and after treatment and radiological investigations are done for all the cases before treatment.

The observations made during the clinical study showed that internal and external drugs are effective in relieving the pain in Thandagavatham patients. During the study period, there was no adverse event reported. As per the Siddha Literature and recent research articles, the ingredients of the trial drugs was found to have anti inflammatory, immunomodulator ,anti-oxidant, analgesic properties owing to the disease manifestations.

The mean pain score before treatment was 7.50, after treatment it was reduced to 1.50. Hence this study reveals that patients treated with trial drugs and varmam showed good enhancement when compared to those who are treated only with trial drugs. Statistical analysis showed significant reduction in the pain score and questionnaire before and after treatment.

The outcome of the trial medicine was assessed by grading method and the results were as follows:

Good improvement	-	patients (80%)
Moderate improvement	-	patients (17%)
Mild improvement	-	patients (3%)

CONCLUSION

- Low back ache is a very common problem and has a ubiquitous distribution. Among the galaxy of causative factors both spinal and extra spinal, the common cause of low backache seems to be the lumbar disc disease. Bad posture plays a very significant role in the genesis of this disease.

- Thandagavatham is mainly due to derangements of Vadha humour.
- The Naga Chendhuram reveals no toxicity in the preclinical studies and hence proved to be safe for human administration.
- The clinical trial proves the efficacy of her trail drugs by reducing the clinical signs and symptoms like radiating pain, numbness, restricted movements and provides better improvement. The study results show that of 8 (20%) of them had mild improvement, 12 (30%) of them had moderate improvement and 20 (50%) of them had good improvement after treatment. Thus these results revealed good relief from the disease after treatment.
- The preparation of trial medicine is economical. The trial Medicines were prepared from easily available ingredients and the palatability of medicine is better and the dosage is also convenient. Patients treated with trial drugs and Varmam showed good enhancement when compared to those who were treated only with trial drugs. When these affected individuals get a better management with this trial drug and Varmam, it would be a great useful medication.
- In the present study there was no adverse effect were reported in clinical trial. Hence the drugs were proven for their safety. The clinical trial conducted in selected patients was satisfactory encouraging. Further studies may be taken up to establish the efficacy of the drug.
- Therefore the author concluded that the trial medicine **NAGA CHENDHURAM (INTERNAL)** and **MOOLAYOGA NIRKUNDI THYLAM (EXTERNAL) WITH VARMAM THERAPHY** can give better solutions for Thandagavatham (Lumbar Spondylosis).

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INSTITUTIONAL ETHICS COMMITTEE

Date:

Sub: IEC review of research proposals.

Ref: Your letter dated

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(An ISO 9001-2000 certified institute)

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CERTIFICATE

This is to certify that the project entitled, **Toxicological and Pharmacological study on NAGA CHENDHURAM** in rats submitted in partial fulfilment for the degree of **M.D. (siddha)** was carried out at C.L. Baid Metha college of Pharmacy, Chennai-97, in the Department of Pharmacology during the academic year of 2015-2016. It has been approved by the

IAEC No: IAEC/XLVIII/32/CLBMCP/2016

C.L. Baid Metha College of Pharmacy ★ CHENNAI-97 ★ Thoraipakkam

(Dr.P.Muralidharan)

IAEC Member Secretary

GOVERNMENT SIDDHA MEDICAL COLLEGE
Arumbakkam, Chennai-106

Communication Of The Decision Of Institutional Ethics Committee (IEC)

IEC No: GSMC-CH-ME-4/2015/016

Protocol title: AN OPEN COMPARATIVE CLINICAL STUDY ON "THANDAGA VATHAM (LUMBAR SPONDYLOSIS)" WITH THE EVALUATION OF TRIAL DRUGS " NAGA CHENDHURAM"(INT) "MOOLAYOGA NIRKUNDI THAILAM" (EXT) AND "VARMAM THERAPY".
Principal Investigator: Dr. C. R. Sreedhana
Name & Address of Institution: Government Siddha Medical College, Arumbakkam, Chennai-106
☑ New Review ☐ Revised Review ☐ Expedited Review
Date of review (DD/MM/YY): 26/03/2015 Date Of Previous Review, If Revised Application:
Decision of the IEC ☑ Recommended ☐ Recommended with suggestions ☐ Revision ☐ Rejected
Suggestions / Reasons / Remarks: Heavy metals analysis should be done.If metals level are raised from normal ppm level ,chronic toxicity study should be done. Change sample size as : 20 patients Internal and External drugs, 20 patients External drugs and Varmam, 20 patients Internal, External drugs, and Varmam. Remove ankylosing spondylitis.
Recommended for a period of 1 year from date of completion of preclinical studies :

Please Note:

- Inform IEC immediately in case of any adverse events/serious drug reaction.
- Seek IECapproval in case of any change in the study procedure, site and investigator
- This approval is valid only for period mentioned above
- IEC member have the right to review the trial with prior intimation.

26/3/15.

Dr.P.Jeyaprakashnarayanan
Chairman

Dr.V.Banumathi
Member Secretary

சித்த மருத்துவ மைய ஆராய்ச்சி நிலையம், சென்னை - 600 106
सिद्ध केंद्रीय अनुसन्धान संस्थान,
अण्णा सरकारी अस्पताल परिसर, अरुम्बाक्कम, चेन्नई – 600 106
SIDDHA CENTRAL RESEARCH INSTITUTE
(Central Council for Research in Siddha, Ministry of AYUSH, Govt. of India)
Anna Govt. Hospital Campus, Arumbakkam, Chennai – 600106
Phone: 044-2621 4925, Fax: 044-2621 4809

01.3.17

CERTIFICATE

Name of the student: Dr. C. R. Sreedhana, III year PG Student, Department of Sirappu Maruthuvam, Government Siddha Medical College, Arumbakkam, Chennai-600 106.

Name of the sample: Naga Chenduram

Name of the Experiment		Mean
Loss on drying(at 105°C)	:	Nil
Total ash	:	92.38%
Water soluble ash	:	33.51%
Acid insoluble ash	:	46%
pH value (10%)	:	6.77
Particle size	:	Passes through 200 mesh

7/3/17

(R. Shakila)
Research Officer (Chemistry) & Head,
Department of Chemistry

(Dr. P. Sathiyarajeswaran)
Assistant Director (Siddha) I/c

डॉ. पी. सत्यराजेश्वरन/Dr. P. Sathiyarajeswaran
सहायक निदेशक (सि-II)/Assistant Director (S-II) I/C
सिद्ध केंद्रीय अनुसंधान संस्थान
(केन्द्रीय सिद्ध अनुसंधान परिषद, आयुष मंत्रालय, भारत सरकार)
अण्णा सरकारी अस्पताल परिसर, अरुम्बाक्कम, चेन्नई-600 106
SIDDHA CENTRAL RESEARCH INSTITUTE
(Central Council for Research in Siddha, Ministry of AYUSH, Govt. of India)
Anna Govt. Hospital Campus, Arumbakkam, Chennai 600106

POONGA BIOTECH RESEARCH CENTRE

No.10/58, Kamala Nehru Nagar, 1st Street, Choolaimedu, Chennai - 600 094.
Ph : 044 - 23634289, Website : www.poongabiotech.com

Dr. B. Janarthanam
Chief Scientist,

12.07.2016

To whomsoever it may concern

This is to certify that Dr. C.R.Sreedhana, PG Scholar, Department of Sirappu Maruthuvam, Goverment Siddha Medical College, Arumbakkam, Chennai – 600 106 has carried out the following work in our centre.

1. Qualitative analysis of Heavy metal in Naga Chendhuram

B. Janarthanam

Dr. B. Janarthanam

Government Siddha Medical College
Department of Medicinal Botany

Dr.S.Sankaranarayanan M.Sc., M.Phil., Ph.D.,
Asst. Professor
Head of the Department

6, Anna Arch Rd,
NSK Nagar,
Arumbakkam, Chennai,
Tamil Nadu 600106.

AUTHENTICATION CERTIFICATE

Based upon the organoleptic/macroscopic/microscopic examination of fresh/market sample, it is certified that the specimen given to Dr. C. R. Sreedhana B.S.M.S., doing M.D. (S) at Government Siddha Medical College, Arumbakkam, Chennai-106 is identified below as

Binomial name	Family
Baptisia bracteata	Fabaceae
Eclipta prostrate syn Eclipta alba	Compositae

References: Flora of Presidency, Gamble, J. S

GSMC/MB-Voucher Specimen No.24/2017

Date: 15.06.2016

Dr. S. Sankaranarayanan M.Sc., M.Phil., Ph.D.,

Head
Dept. of Maruthuva Thavaraiyal
(Medicinal Botany and Pharmacognosy)
Govt. Siddha Medical College,
Arumbakkam, Chennai - 600 106.

GOVERNMENT SIDDHA MEDICAL COLLEGE

ARIGNAR ANNA GOVERNMENT HOSPITAL OF INDIAN MEDICINE

CHENNAI – 600 106

POST- GRADUATE DEPARTMENT OF SIRAPPU MARUTHUVAM

An open comparaitive clinical trial on Thandaga vatham (Lumbar spondylosis) with the evaluation of Siddha trial drugs "Naga Chendurum" (Internal), "Moolayoga Nirkundi thylam" (external) and Varmam Therapy.

FORM I - SCREENING AND SELECTION PROFORMA

1. OP NO: .....

2. NAME: …….

3. AGE: …… 4.GENDER: ……....

5. OCCUPATION: …….. 6.INCOME: ……

7. ADDRESS: ……

……

……

8. CONTACT NO: ……

INCLUSION CRITERIA:

- Age 35-60 years Yes / No
- Patient with appropriate symptoms like lower back pain radiates to the lower extremities anteriorly, Tenderness, numbness, limitation of lower backmovements. Yes/No
- Patients who are willing to undergo radiological investigation and Laboratory investigations. Yes / No
- Patients who are willing to sign the informed consent stating that she will conscientiously stick to the treatment during 12 days but can opt out of the trial of her own conscious discretion. Yes / No

EXCLUSION CRITERIA

History of

- Traumatic condition
- Inter vertebral disc prolapse
- Ankylosing spondylosis

- Spondylolesthesis
- Neoplasm
- Congenital anamolies
- Gibbus deformity
- Cardiac diseases
- Pregnancy women and lactating mother
- Patients with any other serious systemic illness

ADMITTED TO TRIAL:

YES **NO**

Date:

Station:

Signature of the Guide **Signature of the Investigator:**

GOVERNMENT SIDDHA MEDICAL COLLEGE

ARIGNAR ANNA GOVERNMENT HOSPITAL OF INDIAN MEDICINE

CHENNAI – 600 106

POST- GRADUATE DEPARTMENT OF SIRAPPU MARUTHUVAM

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FORM lI -HISTORY TAKING PROFORMA

1. SERIAL NO OF THE CASE: ……. 2.OP NO: .....

3. NAME: …… 4. AGE: …….. 5. GENDER: ……..

5. OCCUPATION: …… 6. INCOME: ……..

7.COMPLAINTS & DURATION:

8.PERSONAL HISTORY:

PERSONAL HABITS	**YES**	**NO**	**IF YES, SPECIFY DURATION/QUANTITY**
Smoking			
Tobacco Chewing			
Alcoholism			
Narcotic drugs			

9. HISTORY OF PREVIOUS ILLNESS/PELVIC SURGERY

10. DIETARY HABIT:

1.Vegetarian

2.Non-vegetarian

11. FAMILY HISTORY:

Whether this problem runs in family?

1. Yes 2.No

If yes, mention the relationship of affected person(s) ----------

History of previous investigations if any ----------

Date:

Station:

Signature of the Guide: **Signature of the Investigator:**

GOVERNMENT SIDDHA MEDICAL COLLEGE

ARIGNAR ANNA GOVERNMENT HOSPITAL OF INDIAN MEDICINE

CHENNAI – 600 106

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FORM III – CLINICAL ASSESSMENT PROFORMA

1. SERIAL NO: ……

2.OP / IP NO: .....

3. NAME: …… 4.AGE: …… 5.GENDER: .....

GENERAL EXAMINATION:

Height (cms) : …….

Weight (kg) : …….

Temperature(°F) : …….

Pulse rate(/min) : …….

Heart rate(/min) : …….

Respiratory rate(/min) : …….

Blood pressure(mm/Hg) : …….

	Present	Absent
Pallor		
Jaundice		
Cyanosis		
Lymphadenopathy		
Pedal edema		
Clubbing		
Jugular vein pulsation		

SYSTEMIC EXAMINATION

CardioVascular System : …….

Respiratory system : …….

Gastro-intestinal system : …….

Central Nervous System : …….

Urogenital system : …….

Endocrine System : …….

SIDDHA SYSTEM OF EXAMINATIONS:

1. THEGI: [BODY CONSTITUTION]

1. Vatha udal
2. Pitha udal
3. Kaba udal
4. Thontha udal

2. NILAM: [LAND WHERE PATIENT LIVED MOST]

1. Kurinji
2. Mullai
3. Marutham
4. Neithal
5. Paalai

3. KAALAM:

1. Kaar kaalam
2. Koothir kaalam
3. Munpani kaalam
4. Pinpani kaalam
5. Ilavenil kaalam
6. Muthuvenil kaalam

4. GUNAM:

1. Sathuvam
2. Raasatham
3. Thaamatham

5. IMPORIGAL (SENSORY ORGANS):

Normal/Affected

Mei - ----------

Vaai ----------

Kann ----------

Mukku ----------

Sevi ----------

6. KANMENDHIRIYAM (MOTOR ORGANS):

Kai ----------

Kal ----------

Vaai ----------

Eruvai ----------

Karuvaai ----------

7. KOSANGAL (SHEATH):

Annamaya kosam ----------

Pranamaya kosam ----------

Manomaya kosam ----------

Vignana maya kosam ----------

Anandamaya kosam ----------

8. UYIR THAATHUKKAL: [THREE HUMORS] (VALI, AZHAL, IYAM)

A) VALI

Pranan –----------

Abanan ----------

Samanan ----------

Uthanan ----------

Vyanan ----------

Naagan ----------

Koorman ----------

Kirukaran ----------

Devathathan ----------

Dhananjayan ----------

B) AZHAL

Analakam ----------

Ranjakam ----------

Sathakam ----------

Prasakam ----------

Alosakam ----------

C) IYAM

Avalambagam ----------

Kilethagam ----------

Pothagam ----------

Tharpagam ----------

Santhigam ----------

9. SEVEN UDAL THATHUKKAL: (SEVEN SOMATIC COMPONENTS)

Saram ----------

Senneer ----------

Oon ----------

Koluppu ----------

Enbu ----------

Moolai ----------

Sronitham ----------

10. ENVAGAI THERVU:

I. NAADI: [PULSE PERCEPTION]

II. SPARISAM: [PALPATION]

III. NAA: [TONGUE]

IV.NIRAM: [COMPLEXION]

1. Vadham
2. Pitham
3. Kabam

V.MOZHI: [VOICE]

1. High Pitched
2. Low Pitched
3. Medium Pitched

VI.VIZHI: [EYES]

VII. MALAM: [BOWEL HABITS / STOOLS]

Niram

Irugal

Ilagal

Others

VIII. MOOTHIRAM [URINE EXAMINATION]

NEERKKURI:

Niram

Manam

Edai

Nurai

Enjal

NEIKKURI

Date:

Station:

Signature of the Guide **Signature of the Investigator**

GOVERNMENT SIDDHA MEDICAL COLLEGE

ARIGNAR ANNA GOVERNMENT HOSPITAL OF INDIAN MEDICINE

CHENNAI – 600 106

POST- GRADUATE DEPARTMENT OF SIRAPPU MARUTHUVAM

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FORM IV :

LABORATORY INVESTIGATIONS PROFORMA

1. SERIAL NO OF THE CASE: ……

2.OP / IP NO: .....

3. NAME: …… 4.AGE: …… 5.GENDER: .....

A) BLOOD INVESTIGATIONS:

BLOOD INVESTIGATIONS		**BEFORE TREATMENT**	**AFTER TREATMENT**
Hb (gm/dL)			
T.RBC (millions cells / Cu.mm)			
ESR (mm)	**½ hr.**		
	1 hr.		
T.WBC (Cells / Cu.mm)			
Differential Count (%)	**Polymorphs**		
	Lymphocytes		
	Monocytes		
	Eosinophils		
	Basophils		

BLOOD INVESTIGATIONS		BEFORE TREATMENT	AFTER TREATMENT
Blood glucose (mg/dl)	**Random**		
	PP		
Serum Calcium			
Renal Function Test	**Blood urea**		
	Serum creatinine		

B) URINE INVESTIGATIONS:

URINE INVESTIGATIONS	BEFORE TREATMENT	AFTER TREATMENT
Albumin		
Sugar		
Deposits		

C) RADIOLOGICAL EXAMINATION

X-Ray Lumbar Spine AP View, Lateral View

	BEFORE TMT	AFTER TMT
Sonographic changes		

Date:

Station:

Signature of the Guide: **Signature of the Investigator:**

GOVERNMENT SIDDHA MEDICAL COLLEGE

ARIGNAR ANNA GOVERNMENT HOSPITAL OF INDIAN MEDICINE

CHENNAI – 600 106

POST- GRADUATE DEPARTMENT OF SIRAPPU MARUTHUVAM

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FORM V: INFORMED CONSENT FORM

"I have read the foregoing information, or it has been read to me. I have had the opportunity to ask questions about it and any questions I have asked have been answered to my satisfaction.

I consent voluntarily to participate in this study and understand that I have the right to withdraw from the study at any time without in any way it affecting my further medical care".

"I have received a copy of the information sheet/consent form".

Date:

Signature of the participant:

In case of illiterate participant

"I have witnessed the accurate reading of the consent form to the potential participant, and the individual has had the opportunity to ask questions. I confirm that the individual has given consent freely."

Signature of a witness Left thumb Impression of the Participant

(Selected by the participant bearing no connection with the survey team)

Date:
Station:

Signature of the Guide: **Signature of the Investigator:**

Signature of participant:

«ÃÍ º¢ò¾ ÁÕòÐÅì¸øæ¡¢,¦ºý¨É-106
«È¢»÷ « ñ½¡ ÁÕòÐÅÁ¨É,¦ºý¨É

தண்டகவாத §¿¡öì¸¡É º¢ò¾ ÁÕó¾¢ý **நாக ৬ৎறனுபய**
À¡¸¡ôÒò ¾¢È¨É ì¸ñ¼È¢Ôõ ÁÕòÐÅ ¬öÅ¢ü¸¡Ê ¾¸Aø AEAõ.
´ô0¾ø ÀÊÅõ

¬öÅ¡ÇÃ¡ø º¡ýÈÇ¢ì¸ôÀð¼Ð

¿¡ý þó¾ ¬ö¨Å Ì¢ò¾ «¨ÉòÐ Å¢ÀÃí¸¨ÇÔõ §¿¡Â¡Ç¢ì Ì ÒÃ¢Ôõ Å¨¸Â¢ø ±Î òÐ¨Ãò§¾ý ±É ¯Ú¾ÂÇì¸¢§Èý.

§¾¾¢: ¨¸¦Â¡ôÀõ:

þ¼õ: ¦ÀÂ÷ :

§¿¡Â¡Ç¢Âý ´ô0¾ø

±ýɢ¼õ þó¾ ÁÕòÐÅ ¬öÅ¢ý ¸¡Ã½ò¨¾Ôõ, ÁÕó¾¢ý ¾ý¨Á ÁüÚõ ÁÕòÐÅ ÅÆ¢Ó¨È ÀüÈ¢Ôõ, ¦¾¡¼÷óÐ ±ÉÐ ¯¼ø þÂì¸ò¨¾ ¸ñ¸¡½¢ì¸×õ, «¾¨É À¡Ð¸ì¸×õ ÀÂýÀÎõ ÁÕòÐÅ ¬ö×ì Ü¼ ÀÃ¢§º¡¾¨É¸û ÀüÈ¢ ¾Õô¾ «Çì Ìõ Å¨¸Â¢ø ¬ö× ÁÕòÐÅÃ¡ø Å¢Çì¸¢ì ÜÈôÀð¼Ð.

¿¡ý þó¾ ÁÕòÐÅ ¬öÅ¢ý §À¡Ð, ¸¡Ã½õ ±Ð×õ ÜÈ¡Áø, ±ô¦À¡ØÐ §Å ñ ÎÁ¡É¡Öõ þó¾ ¬öÅ¢Ä¸ÕóÐ ±ý¨É Å¢Î Å¢òÐ ¦¸¡ûÙõ ¯Ã¢¨Á¨Â ¦¾Ã¢ó¾¢Õì¸¢ý§Èý. ¿¡ý ±ýÛ¨¼Â Í¾ó¾¢ÃÁ¡¸ §¾÷× ¦ºöÔõ ¯Ã¢¨Á¨Âì ¦¸¡ñÎ **தண்டகவாத** §¿¡öì¸¡É **நாக ৬ৎறனுபய** ÁÕó¾¢ý ÀÃ¢¸Ã¢ôÒò ¾¢È¨É ì¸ñ¼È¢Ôõ ÁÕòÐÅ ¬öÅ¢üÌ ±ý¨É ¯ðÀÎò¾´ô0¾ø «Çì¸¢§Èý.

§¾¾¢: ¨¸¦Â¡ôÀõ:

þ¼õ: ¦ÀÂ÷:

§¾¾¢: º¡ðº¢ì¸¡Ã÷ ¨¸¦Â¡ôÀõ:

þ¼õ: ¦ÀÂ÷:

¯È×Ó¨È :

Ð¨Èò¾¨ÄÅ÷ ¨¸¦Â¡ôÀõ:

¬Ã¡öîº¢Â¡Ç÷ ¨¸¦Â¡ôÀõ:

GOVERNMENT SIDDHA MEDICAL COLLEGE, CHENNAI

POST- GRADUATE DEPARTMENT OF SIRAPPU MARUTHUVAM

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FORM VI - WITHDRAWAL FORM

SI NO:

OP / IP NO:

NAME:

AGE / GENDER :

DATE OF TRIAL COMMENCEMENT:

DATE OF WITHDRAWAL FROM TRIAL:

REASONS FOR WITHDRAWAL:

- Long absence at reporting : Yes/ No
- Irregular treatment: Yes/ No
- Shift of locality : Yes/No
- Increase in severity of symptoms: Yes/No
- Development of severe adverse drug reactions: Yes/No

Date:
Station:

Signature of the Guide: **Signature of the Investigator:**

GOVERNMENT SIDDHA MEDICAL COLLEGE

ARIGNAR ANNA GOVERNMENT HOSPITAL OF INDIAN MEDICINE

CHENNAI – 600 106

POST- GRADUATE DEPARTMENT OF SIRAPPU MARUTHUVAM

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FORM VII – PATIENT INFORMATION SHEET

Name of Co- Investigator: C R Sreedhana

Name of the college: Govt. Siddha Medical College

Arumbakkam

Chennai-106.

INFORMATION SHEET FOR PATIENTS PARTICIPATING IN THE OPEN CLINICAL TRIAL.

C R Sreedhana studying M.D (Siddha) at Govt.Siddha Medical College, Chennai, is doing a clinical trial on ''Thandaga vatham (Lumbar spondylosis). It is becoming a most common disease, occurring throughout the world. In this regard, I am in need to ask you few questions. I will maintain confidentiality of your comments and data obtained. There will be no risk of disclosing your identity and no physical, psychological or professional risk is involved by taking part in this study. Taking part in this study is voluntary. No compensation will be paid to you for taking part in this study.

You can choose not to take part. You can choose not to answer a specific question. There is no specific benefit for you if you take part in the study. However, taking part in the study may be of benefit to the community, as it may help us to understand the problem of defaulters and potential solutions.

If you agree to be a participant in this study, you will be included in the study primarily by signing the consent form and then you will be given the internal medicine "NAGA CHENDHURAM" twice a day with water for 48 days.

The information I am collecting in this study will remain between you and the Co-investigator (myself). I will ask you few questions through a questionnaire. I will not write your name on this form. I will use a code instead.

The questionnaire will take approximately 20 minutes of your time.

If you wish to find out more about this study before taking part, you can ask me all the questions you want or contact C R Sreedhana, PG Scholar cum Co- investigator of this study, attached to Govt. Siddha Medical College, Chennai-106. You can also contact the Member-secretary of Ethics committee, Govt.Siddha Medical College, Chennai.

«ÃÍ º†ò¾ ÁÕòÐÅì ¸øæ¡†, ¦ºý ¨ É-106

«È†»÷ « ñ ½¡ ÁÕòÐÅÁ¨ É, ¦ºý ¨ É

தண்டகவாத §¿¡öì¸¡É º†ò¾ ÁÕó¾†ý **நாக** ெசறனுரய

À¡†¸¡†ôÒò ¾†È¨ É ì ¸ ñ ¼È†Ôõ ÁÕòÐÅ ¬öÅ†ü¸¡É ¾¸Aø AEAõ

¬Ã¡öîº†Â¡Ç÷ ¦ÀÂ÷: ÁÕòÐÅ÷. **ச அர ழறதன**
¿†ÚÅÉò¾ý ¦ÀÂ÷ : «ÃÍ º†ò¾ AOüÐA ¸øæ¡†

«ÕõÀ¡ì¸õ,

¦ºý ¨ É-106

«ÃÍ º†ò¾ ÁÕòÐÅì ¸øæ¡†Âøø Àð¼ §ÁüÀÊôÒ ÀÂ†ý Ú ÅÕõ ¿¡ý

ÁÕòÐÅ÷. **ச அர ழறதன**, **தண்டகவாத** ±ý Ûõ §¿¡Â†ø ÁÕòÐÅ ¬Ã¡öîº†Â†ø ®Î Àð Î û§Ç ý.

þÐ ÀÃÅì ÜÊÂ §¿¡ö «øÄ.

þó¾ ¬Ã¡öîº† ºõÀó¾Á¡¸ º†Ä §¸ûÅ†¸¨ Çì §¸ð¸×õ, §¾¨ ÅÂ¡É ¬öÅ¸ô ÀÃ†§º¡¾¨ É ì Ì ¾í¸¨ Ç ¯ðÀ Î ò¾×õ ¯û§Çý.

þó¾ ¬Ã¡öîº†ì Ì ¾¡í¸û Å†ÕôÀò¾†ý §ÀÃ†ø ¯ðÀ Î õ Àðºò¾†ø ¯ûÁÕó¾¡ **நாக** ெசறனுரய **130** mg ெதனலெல 2 §Å¨Ç (¸¡¨Ä, Á¡¨Ä) ¯½×ì Ì À†ý 48 ¿¡ð¸û ¯ð¦¸¡ûÇ §Å ñ Î õ. ¦ÅÇ†§¿¡Â¡Ç÷¸û 7 ¿¡ð¸Ù ì Ì ´ÕÓ¨È

ÁÕòÐÅÁ¨ É ì Ì ÅÃ §Å ñ Î õ.

þó¾ ÁÕóÐ º†ÈôÀ¡ **தண்டகவாத** §¿¡öì¸¡ « í¸¦¸Ãì¸ôÀð¼ º†ò¾ ÁÕòÐÅ á Ä†ø

ÜÈôÀð Î ûÇÐ.

þó¾ ¬Ã¡öîº†Â†ø ¾í¸¨Ç « ÛÁ¾†ò¾ À†È Ì ¯í¸Ù ì Ì Å†ÕôÀõ þø¨Ä¦ÂÉ†ø ±ô§À¡Ð §Å ñ Î Á¡É¡Öõ ¬Ã¡öîº†Â†ø þÕóÐ Å†Ç¸†ì ¦¸¡ûÇ ¯Ã¨Á ¯ûÇÐ.

þó¾ ¬Ã¡öîº† ºõÀó¾Á¡¸ §¿¡Â†ý ¾ý¨Á ÀüÈ†Ôõ ÁüÈ Å†ÀÃí¸Ù ì Ì õ
¬Ã¡öîº†Â¡ÇÃ¡É ÁÕòÐÅ÷: **ச அர ழறதன**, (Àð¼ §Áü ÀÊôÀ¡Ç÷ º†ò¾ ÁÕòÐÅ Ð¨È)
«Å÷¸¨Ç ±ó¾ §¿Ãò¾†Öõ ¦¾¡¼¾÷ºî¸¡ûÇA¡ò ¸ô§À°± ñ : 8190816643

§ÁÖõ þó¾ ¬Ã¡öîº†ì Ì ¾ì¸ « ÛÁ¾†î º¡ýÚ (IEC) ¦ÀÈôÀð Î ûÇÐ.

þó¾ ÁÕóÐ ÓüÈ†Öõ À¡Ð¸¡ôÀ¡É ¦À¡Õð¸¨Çì ¦¸¡ñ Î ¾Â¡Ã†ì¸ôÀð Î ûÇÐ. Àì¸Å†¨Ç×¸¨Ç ²üÀ Î ò¾¡Ð.

§ÁÖõ ¯½× Ó¨ÈÂ†ø ÁÕòÐÅÃ¡ø ÜÈôÀ Î õ Àò¾†Âõ ¸¡ì Ì Á¡Ú «È†×Úò¾ À Î ¸È†Ð.

þÐ ºõÀó¾Á¡É ¾í¸ÇÐ «¨ÉòÐ Å†ÅÃí¸Ùõ Ã¸º†ÂÁ¡¸ ¨Åì¸ôÀ Î õ ±É ¯Ú¾†«Ç†ì¸†§È ý.

þ¾†ø ÀÂ½ôÀÊ Ó¾Ä†Â ±ó¾ ¯¾Å†ò ¦¾¡¨¸Ôõ ÅÆí¸ô À¼ Á¡ð¼¡Ð.

þó¾ ¬Ã¡öîº†Â†ý §À¡Ð ¯¼Öì Ì §ÅÚ À¡¾†ôÒ ²üÀ Î õ Àðºò¾†ø «È†»÷ « ñ ½¡ ÁÕòÐÅÁ¨ É†ø, ¾ì¸ º†¸†î¨º «Ç†ì¸ôÀ Î õ

GOVERNMENT SIDDHA MEDICAL COLLEGE

ARIGNAR ANNA GOVERNMENT HOSPITAL OF INDIAN MEDICINE

CHENNAI – 600 106

An open comparative clinical trial on Thandaga vatham (Lumbar spondylosis) with the evaluation of Siddha trial drugs "Naga Chendhurum" (Internal), "Moolayoga Nirkundi Thailam" (external) and Varmam Therapy

FORM IV D

DIETARY ADVICE FORM

§º÷ì ¸ ÜÊÂ ¯½ × ¸ û:

- ¸¡ö¸ û:¸ò¾Ã¢À¢ ï Í,ÓÕ í ¨ ¸À¢ ï Í,, « Å ¨ ÃÀ¢ ï Í,
  ¬ ¸¢Â ¨ Å §º÷ì ¸ §Å ñ Î õ.

- ¸¦¨ Ã¸ û:¸Ã¢º¡ ¨ Ä,¦À¡ ý É¡ Í ¸ ñ ½¢,Á½ ò¾ì ¸¡Ç¢,
  ÓÕ í ¨ ¸ ¸¦¨ Ã,Àº ¨ Ä¸¦¨ Ã,º¢Ú ¸¦¨ Ã, ¸È¢§ÅôÀ¢ ¨ Ä ¬ ¸¢Â ¨ Å §º÷ì ¸ §Å ñ Î õ.

- ÀÆ í ¸ û:Á¡Ð ¨ Ç, ¬ ôÀ¢û ,Å¡ ¨ Æ,§ÀÃ¡î ¨ º, « ò¾¢,
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GOVERNMENT SIDDHA MEDICAL COLLEGE

ARIGNAR ANNA GOVERNMENT HOSPITAL OF INDIAN MEDICINE

CHENNAI – 600 106

POST - GRADUATE- DEPARTMENT OF SIRAPPU MARUTHUVAM

An open comparative clinical trial on Thandaga vatham (Lumbar Spondylosis) with the evaluation of Siddha trial drugs "Naga Chendhurum" (Internal), "Moolayoga Nirkundi Thailam" (external) and Varmam Therapy

FORM IX - ADVERSE REACTION FORM

SERIAL NO:

OP NO:

NAME:

AGE:

GENDER:

DATE OF TRIAL COMMENCEMENT:

DATE OF OCCURRENCE OF THE ADVERSE REACTION:

TIME:

DESCRIPTION OF ADVERSEREACTION:

Date:

Station:

Signature of the Guide: **Signature of the Investigator:**